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Papers and discussions on the nature and purpose of **institutional** research, the present and projected problems **of space utilization**, enrollment projections, salaries, **faculty load**, and the role of institutional research in **administrative** decisions. A list of 150 documents **concerning institutional** research, representing 40 **institutions or organizations**, are included in the appendix.

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Conference at

NORTHERN ILLINOIS UNIVERSITY
DeKALB, ILLINOIS
MARCH 29-30, 1962

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FOREWORD

In recent years bureaus of Collegiate institutional research have been coming into existence in an ever increasing number. These bureaus are concerned with internal and certain external problems of the college or university. They are an answer to the need for planning, study, evaluation, and projections of the institutions, their physical facilities, administration, faculty and other personnel, and, of course, their students -- past, present, and future. These needs are in part met through research studies on such specific topics as space use, staff utilization, staff load, student characteristics, enrollment projections, cost analyses, grade analyses, salaries, drop outs, course offerings, assets of the institution to the community, and the like. These may be internally initiated, be on a cooperative basis with other institutions, requested by boards of control or by accrediting or governmental agencies.

Generally speaking, the area of research study and evaluation is rooted in a setting of scientific method as a means toward problem solving. Business and industry have found significant advantages in scientific management in our highly competitive society. These advantages have often made the difference between success or failure. In colleges and universities, with the ever increasing pressures of masses of students descending upon the institutions of higher learning, and with society placing more and more emphasis on a college education, it has become imperative that colleges and universities study and evaluate themselves in every way possible. This is the task assigned to bureaus of university research.

It was with the above facts in mind that the conference on institutional research reported herein was held.

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ADDRESS OF WELCOME
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NATURE AND PURPOSE OF INSTITUTIONAL RESEARCH IN HIGHER EDUCATION
Speaker: **James Doi**, Associate Provost, University of Colorado.
Discussion: **L. J. Lins**, Coordinator, Institutional Studies, University of Wisconsin
Elmer West, Director, Office of Statistical Information and Research, American Council on Education

HOWELL:

The general format of our program will be a presentation of the topics as indicated, following which we will ask the discussants to say whatever they wish at whatever length they wish, and following that we will entertain questions from the floor to the main speaker or to each one of the discussants as the case may be. I would suggest that you keep in mind the format of the remainder of the program in each case, so that you don't jump ahead and ask questions at this session that will possibly be more appropriate at a later session.

We are very fortunate in having as our keynote speaker this morning Dr. James Doi who is one of the nation's leading experts in the subjects of university financing and administration. He has been Director of Institutional Research at the University of Colorado since 1957. And, as if that weren't enough, in 1960 he added the duties of associate provost with responsibility in several academic areas, including educational experimentation and the preparation and analysis of academic budgets. He is a native of California, attended Stockton Junior College and Muskingum College and received his Masters and Doctorate from the University of Chicago. He served in the U.S. Army during and after World War II in the Phillipines and in occupied Japan, and remained in Japan for two years following the war as a civilian assistant in text books and curriculum work with the occupation forces. He was research assistant at the University of Chicago in 1951 and 1952. He then went to the New Mexico Board of Educational Finance as a budget analyst and assistant to the chancellor. He became assistant chancellor in 1956. Before he went to Colorado, he was a consultant to the Colorado Association of State Supported Institutions of Higher Education; and from 1957 to 1960 he was Director of Studies for that organization in addition to directing research studies for the University. He has been a consultant on numerous educational studies including the President's Commission on Education Beyond the High School, studies in cooperation with the United States Office of Education, the

Educational Policies Commission, the American Association of Collegiate Registrars and Admissions Officers; and, at the state level, he has participated in studies at Michigan and Utah. He is co-author with John Dale Russell of five articles and of what I think we would all regard as the "Bible of Space Use." He is married, has one daughter, and will now speak to us on the "Role and Function of Institutional Research in Higher Education."

DOI:

What is institutional research? Is it simply a fancy all-embracing name for research in higher education, or is it a particular type of research concerned with special problems of colleges and universities? Is it actually a new type of research activity or is it merely a new name for something which colleges and universities have been doing for many years? Is it applied research, basic research, or both? Is it another short-lived educational fad, or can it become a significant feature of American higher education?

Five years ago when I joined the University of Colorado as director of its newly established office of institutional research, these and similar questions seemed important to me, and I sought to formulate some answers. I found this task both disappointing and encouraging. I was disappointed to find so few published statements on the nature and role of institutional research. Ruth Eckert and Robert Keller's collection of University of Minnesota studies, published in 1954 (A University Looks at Its Program), was at that time the only major work of recent publication. There were also a number of institutional surveys, which one might construe to be a form of institutional research, although the authors themselves did not refer to them as such. Then there were the many collections of fiscal and enrollment data, analyses of student characteristics, and studies of instructional departments. Might not these also be construed as forms of institutional research? Or should institutional research be defined as something other than the kinds of data collections and analyses produced by these various university offices?

The paucity of published statements on the nature and role of institutional research was, at the same time, encouraging. I found that in suggesting policies for the development of institutional research at the University of Colorado I could entertain almost any reasonable notion of what the program should be like without fear of authoritative challenge. The faculty committee which had recommended the establishment of the office of institutional research was generous in suggesting its functions. The committee had suggested that the director of institutional research:

> "1. Conduct research related to legislative appropriations.
>
> 2. Conduct research related to any phase of University education, administration and operation.
>
>   a. In exercising this function, the director shall secure qualified personnel either from the University staff or outside sources.
>
>   b. He shall make continuing research studies relative to effective control and general University improvement.
>
> 3. Any other type of research required to meet the needs of the University."

One could not ask for a broader license. Any aspect of the University was fair game for the director of institutional research. But this represented the view of only one university.

In 1957 I doubt that there were more than six universities and a handful of liberal arts colleges and state colleges with formally organized offices or bureaus of institutional research. Since then, such units have been created in a dozen or more universities, among them Michigan State, Wisconsin, Wayne State, Utah, Arizona State, Tennessee, California, New York University and Rhode Island. Such offices have also been recently established in liberal arts colleges and state colleges, but as to their approximate number, I have no idea.

Also in the last three or four years, a number of definitive and authoritative statements on institutional research has become available. In 1959 Professor W. H. Cowley of Stanford University gave his lecture entitled "Two and a Half Centuries of Institutional Research." That same year, John Dale Russell published his ideas on the purpose and organization of institutional research. In 1960, A. J. Brumbaugh expressed his thoughts on the subject in the phamplet "Research Designed to Improve Institutions of Higher Learning." In 1959, Hugh Stickler of Florida State University completed his survey report of institutional research concerning land-grant institutions and state universities, and the following year the Western Interstate Commission of Higher Education published Hall Sprague's study of institutional research in the West.

Also, in the summer of 1959, the Western Interstate Commission of Higher Education launched its series of annual workshops on institutional research for college and university administrators in the western states; the Southern Regional Education Board started its series of workshops for the southern states in the summer of 1960; Paul Dressel and his colleagues at Michigan State University last fall sponsored a workshop on institutional research for liberal arts colleges; and this summer, B. Lamar Johnson and his group at the University of California at Los Angeles organized a workshop on institutional research for junior colleges. In 1961 the American Council on Education devoted a section of its annual meeting to a discussion of institutional research -- its functions, organization, and future outlook.

What we are witnessing is the spring of institutional research. And as in the Songs of Solomon " . . . the time of the singing of birds is come, and the voice of the turtle is heard in our land." Thus, if I seem occasionally to chirp, I trust that you will be tolerant of my enthusiasm. And with apologies to W. H. Cowley, John Dale Russell, A. J. Brumbaugh, and Hall Sprague, let me review briefly what the turtle has to say.

W. H. Cowley defines institutional research as follows:

> "Educational research . . . consists in any thorough-going investigation of an educational problem; and institutional research in higher education constitutes such an investigation of any topic concerning which a college or university, or a group of them, collects or seeks to collect data toward the end of improving operations." (W. H. Cowley, "Two and a Half Centuries of Institutional Research," College Self Study, pp. 1-16, 1960.)

This definition has three significant aspects. One, "any topic" can be a subject of institutional research. Two, institutional research can be undertaken by a single institution or collectively by a group of institutions on a topic of mutual interest. And three, the object of institutional research is to improve operations.

In his paper, Professor Cowley deplores the rather restricted current definitions of research, namely that research, to be considered research, must employ statistical concepts. He suggests that many educational questions of major gravity are not subject to measurement. By this, I gather, he is telling us that institutional research in higher education can and should be concerned with non-statistical studies, as well as those involving statistics. With this I agree.

It is also interesting to note that Professor Cowley had been asked to review, in his lecture, the most recent three decades of institutional research in American colleges and universities, but he chose to speak on two and a half centuries of institutional research. It was his way, I suspect, of telling those of us who were new to the game and therefore prone to think of our efforts as being new that, from the very beginning, American colleges and universities have been engaged in institutional research. Some of the terms and methods used may be relatively new, but the nature of the activity is very old.

John Dale Russell views institutional research as a form of applied research. He notes that basic research is carried on solely in the spirit of inquiry, without regard to any practical use or application of the results. Institutional research, however, is nearly always stimulated by the desire to find an answer to some practical problem. Some basic research on higher education can arise out of institutional research, such as when the search for an answer to a practical problem requires supplementary research on the techniques of investigation or even the invention of new techniques. (John Dale Russell, "The Purpose and Organization of Institutional Research," College Self Study, pp. 17 - 22, 1960.)

There is a tendency in institutions to assign to the office or bureau of institutional research the responsibility of answering questionnaires and preparing statistical reports. Dr. Russell, in speaking to this point, says that this is not "research," if it involves only the compilation of readily available data. Thus, not every task assigned to an office of institutional research is research.

A. J. Brumbaugh advocates a somewhat broader definition of institutional research than does Dr. Russell. Dr. Brumbaugh gives this definition:

> "Institutional research . . . consists of studies and investigations focused on current problems and issues in institutions of higher education. It also consists of studies and investigations of problems and issues that are basic to long-range planning or that may ultimately have implications for institutional operations. The former is typically applied research; the latter is basic research in higher education." (A. J. Brumbaugh, "Research Designed to Improve Institutions of Higher Learning," pp. 2 - 3, 1960.)

By way of indicating what he means by basic research in higher education, Dr. Brumbaugh refers to research in specific disciplines that may have educational applications such as studies in the psychology of the learning process.

I shall not take the time here to discuss whether some of the differences in the definitions given by Drs. Cowley, Russell, and Brumbaugh are more apparent than real. The important thing is that all three conceive of institutional research as investigations which cover a wide range of topics and which are designed to improve institutions of higher education.

Let me now return to the question of how new is institutional research. As Dr. Cowley has pointed out, American colleges and universities have been engaged in institutional research for a very long time. But many of us currently interested in institutional research believe that there is something new about it. This something new has been aptly stated by Hall Sprague:

> "The term institutional research, as a collective designation for various kinds of institutional self-studies, is fairly new. Even newer is the notion that institutional research is, or should be, a recognized function of a college or university, analogous to business management, public relations or student personnel services. More recent still is the idea that this function should be coordinated and/or reviewed by a person or office specifically designated for this purpose." (H. Sprague, Institutional Research in the West, p. 5, 1960.)

It is the coordination and systematic review of research needed for institutional improvement and the recognition of this process as a continuing, day-to-day function of a college or university that gives contemporary institutional research a distinctive place in the history of educational research.

The days of the sporadic, one-shot institutional survey and the uncoordinated research efforts of the individual business manager, the registrar, the testing officer, and the dean of faculty are fast disappearing. The college or university of today is a far too complex and a much too fast changing institution to be adequately understood and managed by such efforts.

This does not mean that there will no longer be committee surveys or that the business manager, the registrar, the testing officer, and the dean of faculty, among others, will not be involved in institutional research. Indeed, they must and will be involved. But their efforts will be coordinated and the results of their research examined and synthesized so that the institution as a whole can move ahead on the basis of mutual understanding of research facts.

It has been frequently noted that a research-conscious, aggressive dean or business manager will move far ahead of the rest of the institution, sometimes so far ahead that the laggers impede further progress on the part of the aggressive dean or business manager. The resulting push and pull has been the source of much intra-institutional friction. Patience has its limits and sooner or later criticism of one's colleagues must flow.

Or, take another example. The testing officer and the registrar may have much data concerning student aptitudes, abilities, and personality characteristics. But these data have not always been brought to timely and effective use by faculty members in effecting changes in their instructional procedures and programs. The time lag between research completion and application of the findings may be as much as four or five years.

Coordinated institutional research operates on the assumption that not all administrative officers are equally interested in, or capable of conducting studies of their operations. It has as one of its objectives the stimulation of operations research on the part of administrative officers. In an area where this attempt fails, it must find ways and means of getting the research done so that area will not hinder general institutional improvement.

Coordinated institutional research also operates on the assumption that not all faculty members are equally receptive to the self-examination and application of research findings to their instructional programs. Here again, it seeks to stimulate self-examination, to render research assistance where and when necessary, and to bring to the attention of faculty members institutional data pertinent to their functions. I suspect that if faculty members have at times seemed reluctant to engage in self-evaluation of their programs or to undertake educational experimentation, it is in part because the administration has not always provided them with the necessary assistance. Admittedly their reluctance also stems in part from the very human desire to protect sacred cows, but I believe we are in pretty general agreement these days that higher education cannot afford sacred cows fostered by self-interests.

Institutional research has already made good beginnings in clarifying many of the notions we have held concerning unit costs in higher education, space utilization, class size and teaching loads, student-faculty ratios and scope of course offerings. These efforts were largely motivated by economy, and in a number of instances economy has been effected. But, institutional research is not concerned primarily with economy of operations. Its chief concern is institutional improvement, and this may, as it often does, mean increased financial support for many aspects of higher education.

The effective coordination of research designed to bring about institutional improvement is, I believe, good and sufficient reason for the current interest in institutional research. Two recent developments in higher education suggest other reasons for this interest. One is the increased concern on the part of colleges and universities for long-range planning. The other is that the current generation of social scientists has, in a sense, rediscovered the college student, the academic man, and the college life as legitimate objects for research.

Let me first take up the relationship of long-range institutional planning to institutional research. Research and planning go hand in hand. I think many in higher education will concede that we have not planned our growth systematically and well. New programs have been initiated without adequate consideration to other more pressing needs of the institution or to the long-term commitments and implications. Certain institutions have permitted themselves to grow like Topsy, and, while she may have grown to be an attractive woman because the laws of nature and the arrangement of her genes decreed that she should be so, there are no laws of institutional growth that guarantee an institution increased effectiveness along with increased size. If such effectiveness is to come, it must come through planning. Some institutions have made a virtue of smallness--small enrollments, small classes, and small student-faculty ratios--and today find themselves on the brink of extinction. Even smallness must be planned in accordance with the facts of institutional resources and the expectations of students and faculty.

Most of the long-range planning that has been done until now has dealt with enrollment projections, finances, and physical plant. The usual procedure is to project a given enrollment, then compute an estimated budget for a given year by multiplying the number of students by an estimated per student cost. The physical plant needs are frequently computed by multiplying the estimated number of students by the number of square feet of floor space required per student. The more sophisticated planning studies are characterized by differentials in per student costs for graduate and undergraduate students and differentials in space standards for graduate and undergraduate students and for various programs and functions.

The identification of these various differentials is the task of institutional research. But for one very critical aspect of the planning, actually the most important, institutional research has yet to come up with a satisfactory answer. How can an institution project changes in programs and functions? We all know that programs and functions change over a period of several decades, sometimes sooner. A program which prospered a decade ago is less prosperous today, and another which was struggling for recognition has come to play a vital role in the life of the institution. A function which required only three per cent of the institutional budget two decades ago, today requires six per cent. Its space requirements have also doubled. Following are examples of programs and functions which have either declined or prospered in the last two decades -- general education, international education, engineering, modern languages, sponsored research, the library, student services, graduate instruction and research, and intercollegiate athletics.

Yet you will find that many long-range studies of physical plant needs and financial needs are based on the assumption that in 1970 or 1980 institutional programs and functions will be pretty much the same as they are today. The planners know that this will not be so, but in the absence of knowledge of what the changes are likely to be, they have no choice but to proceed on this assumption.

The search for this knowledge of what and when such institutional changes will occur and how they occur is, in my opinion, one of the most challenging tasks facing institutional research. Equally important is the search for knowledge of how to make the changes at the proper time, and thus to reduce the gap between what an institution is actually doing and what needs to be done.

A most heartening and promising recent development in higher education is the entry of a substantial number of psychologists, sociologists, and social anthropologists into the field of research on colleges and universities. This is particularly true in the area of research on the college student, the faculty, and college life.

I do not mean to imply by this statement that social scientists have never before seriously regarded the college student, the faculty, and the campus as legitimate subjects for research. Social scientists of past generations were involved in research on higher education. Among them were Veblen, Robert C. Angell, Ruth Strang, and Willard Waller. And spanning the pre-World War II era and the current period were men such as Theodore Newcomb and Logan Wilson. But in general, previous generations of social scientists were much preoccupied with the exotic and the unusual, such as the puberty rites of primitive groups, the impact of modern technology on an isolated mountain village, abnormal psychological behavior, causes of delinquencies, the slums of a city, and the ethos of hobos. Only a few recognized that in their own backyard, the campus and classroom, were there appropriate subjects for research.

In perusing the recent literature on college students, I looked for statements which might help explain why the current generation of social scientists has taken the college student and college life as subjects for research. The Jacobs' report on the changing values of college students seems to have been an important stimulant to social scientists. His rather dismal conclusions concerning the impact of the educational process on student values jolted the academic community. Another stimulant is the availability of funds for research, especially in the way of foundation grants. Another is the development of computer techniques. Perhaps an even more important factor is the increased confidence that social scientists now have in their techniques of analysis and measurement of social and psychological phenomena. This confidence is essential in analyzing situations and problems in one's own backyard, especially when that backyard is peopled by groups who are frequently suspicious, at times even hostile, and extremely vocal in their criticisms of both research methodology and results. The previous generation of social scientists was relatively immune from criticism, when they took as their subjects primitive communities and deviant groups who cared little about research and who were little known to scientists' colleagues. But college students do care about what the researcher has to say about what he thinks they think, and how they interact and feel; and faculty members also care very much about what a researcher may have to say of their students and themselves. Another reason seems to be that research on educational problems and issues did not in the past bring to the social scientist as much professional status as research on other subjects. Perhaps educational research carried with it the taint of being applied research, rather than basic.

But whatever the reasons, it is sufficient to note that many social scientists today are engaged in research on higher education and we can look forward to the results of their efforts.

Their works, however, pose a problem to the college administrator. Much of the research findings will be difficult for him to absorb, not so much because of volume which will be substantial, but because they will be described in technical jargon. Social scientists are no different from other scientists; they too tend to address their research reports to each other, and not to the administrator or the layman. Also the college administrator will find that a substantial portion of the social scientists' research findings begs translation into significance for institutional planning and day-to-day operation. For example, what should and can an institution do about the fact that a high proportion of its students has a certain personality profile? Should it attempt to alter the composition? What purpose will be served by such an alteration? And how should it go about changing the student composition, if it should decide that it is desirable to do so?

The social scientists engaged in research on college students and college life are not unaware of the practical implications of some of their research for higher education and the fact these implications cause some anxiety among college administrators.

For example, following is a statement which appeared in a recent publication dealing with the college student:

> "The question was raised this afternoon, what proportion of dissident or somewhat different students do you need in order to make their group strong enough to sustain itself in a college, but not so strong that it tends to dominate the whole campus? This is a fascinating problem. I suppose it might be called 'human engineering,' or something of the sort. It is somewhat frightening to think of setting up a human community according to some plan of that kind." (Spotlight on the College Student.)

This awareness of the implications of their research for the development of higher education is also manifested in the social scientists' willingness to participate in the recent regional workshops on institutional research. Many of the key speakers at these workshops have been social scientists. Among them were Theodore Newcomb and Wilbert McKeachie of Michigan; Robert Pace and George Stern of Syracuse; and T. R. McConnell, Paul Heist, Burton Clark, and Martin Trow of the Center for Study of Higher Education in Berkeley.

Whether or not these social scientists use the term "institutional research" to describe their studies is unimportant. As a matter of fact, some of them do. What is important is that institutional research agencies consider it to be their task to work with these social scientists in interpreting the significance of their research to college administrators and in bringing to bear the new found knowledge in improving institutions of higher education.

I have not in this paper attempted to describe in detail specific topics of institutional research. This would be a fairly ambitious task, since institutional research, as previously defined, covers every study which is designed to improve a college or a university or which has implications for such improvement. The studies include investigations of unit costs, space utilization, faculty retention and withdrawal, student retention and withdrawal, faculty morale, student personality characteristics, the socioeconomic backgrounds of students, the campus environment, instructional methods and procedures, program needs, administrative organization, relationship of faculty and administration, etc.

I have chosen instead to emphasize institutional research as an organized function rather than as a collection of studies. Studies of colleges and universities will be made as they have in the past, regardless of whether one chooses to call them institutional research or some other name. But as a function, institutional research consciously and continuously seeks to bring about improvement in a college or a university. Improvement through research is our business.

HOWELL:

Thank you, Dr. Doi. This gets us off to an excellent start. The first person who will comment on Dr. Doi's paper is Dr. L. J. Lins. Dr. Lins has run almost the full gamut of research and education. At the present time he is the Coordinator of Institutional Studies, he is acting Registrar and acting Director of Admissions. He has taught in the public schools in Wisconsin, Illinois, and Michigan at both the elementary and the secondary levels; he has been on the staffs of Detroit and Marquette Universities; he has been in the office of Student Guidance and Records at the University of Wisconsin; and became Director of the Office of Statistics and Machine Records at Wisconsin in 1948. In 1953 he became the Director of Student Personnel, Statistics and Studies, and in 1959 he became the Associate Registrar and Coordinator of Institutional Studies. He has had time for his homework; he has six children, three boys and three girls.

LINS:

Thank you. I see no reason for me to criticize Dr. Doi's paper. Nor am I going to give a speech. Dr. Doi has given us much to think about in his very excellent "keynote" address. What I might do, however, is to elaborate on a couple of points that Dr. Doi made. I will do this very briefly so you may still have time to ask questions.

Institutional research is a means of bringing together data and information on which wise administrative decisions can be based. One of my mottoes in institutional research is that "Anything worth doing is worth evaluating." I might differentiate between what I feel is and is not institutional research in a very simple way, since we have had a very broad definition of institutional research as covering the entire range of the institutional operation. Consider the case of the scientist who is involved in atomic energy research. We are not concerned in institutional research, I think, with how many foot pounds of energy it takes to put a rocket into space. But we are concerned with whether the institution should initiate or continue a program of scientific research associated with the ability to put that rocket into space; in other words, with whether or not we should have a particular activity on the campus.

Dr. Doi commented on the organization of institutional research. I think we might emphasize, as he did, that the needs of the various institutions may differ. The operation and the organization of institutional research in a particular institution should be such that it will meet the needs of that particular institution. In this respect, perhaps no two institutions can agree on the same organization, nor perhaps, should they.

In a particular institution, we might find a Director of an Office of Institutional Research or a Director of a Bureau of Institutional Research, with a rather large staff, having a responsibility for developing studies in many and diverse areas.

In another institution, such as Wisconsin, we do not find this is true. As Dr. Doi pointed out, there is a Coordinator of Institutional Studies at the University of Wisconsin. One of the reasons that we have a coordinator is because of a basic philosophy which I have concerning institutional research. That is, that the work being done in operational research generally should be done in cooperation with the individuals who are very close to the scene of operation--individuals who really know the area. An institutional research man can help them in their methods of research. He can help them in bringing together materials from areas with which they are not as familiar as their own. We have various offices and committees which are working on institutional topics. The coordinator works with these persons and brings materials together in attempting to provide various types of data related to an institutional problem. In addition, the Office of Institutional Studies does independent research in areas not covered by committees or other offices.

I am very happy to see a group such as this coming together. As we look at the past few years, we have seen institutional research being discussed at various meetings. The Western Interstate Commission on Higher Education, the Southern Regional Education Board, and the Northeastern Board of Higher Education have had some very fine conferences in the area of institutional research. There also is the Institutional Research Council of Eleven, composed of the "Big Ten" universities and the University of Chicago. Conferences such as these are very valuable. I might mention also the National Institutional Research Forum, which incidentally will be opened up this coming year to much broader membership than it has had in the past. Previous to this time, it has been an invitational conference with the group limited to 50 people from throughout the United States.

I would like to make only one other point, and that is that I believe one of the most important contributions of conferences of this type, whether sponsored by an institution or a regional or national group, is that they afford an opportunity to exchange methodology. I am interested in the institutional research results of a particular institution and find these very useful but am even more interested in the methods used in the research.

In this respect I might mention plans which have pleased me a great deal. As an Associate Editor of the Journal of Experimental Education, I have been given the opportunity to bring together some studies of an institutional research nature for publication in a special issue to come out in November or December of this year. I have been very pleased with the articles submitted and with the interest evidenced by the individuals who are associated, either in title or without title, with institutional research work. I hope this publication will make a contribution. We are concerned more with "how do you do it" than with results of research. We have received a wide variety of articles from people around the country and from outside the continental boundaries of the United States. In having reports of methods used by various people, I think that perhaps we may be able to develop even better methods.

I will let these comments suffice for the present. I will be glad to try to help answer questions at the conclusion of the panel presentations.

HOWELL:

Our other discussant, Dr. Elmer West, is the Director of the Office of Statistical Information and Research of the American Council on Education. He has been with the American Council for the past seven years. Prior to that he was at the University of Pittsburgh, the University of New Hampshire, Stoneleigh

College, and the American Institute for Research. His major field is psychology and he has his education from Ohio University in Athens and Harvard University. The various things that he has done make a long list. He has published widely in this area, and his work with the American Council has brought him in contact with a multitude of studies, most of which could be classified as institutional research under the terms of the definition we have just heard.

WEST:

In 1957 we held the First National Conference on Institutional Research. It was hard to find people in institutional research to attend the meeting, and we did not find many. I think this was because of the problem of identification. I have heard of more people in institutional research here than we had listed with that title before our conference. This is a very serious problem. I want to come back to that from the Council point of view. We got interested in institutional research because national problems are developing in education. Congress is interested. They are asking questions, and you people have to provide the answers. The only way to get good answers is by research, and it is for that reason that five years ago we began to work as much as we could with people in the institutional research field. Jim Doi has been one of the most productive in this area, and I am very happy to say that the Council distributes his publications.

The important thing in all these talks is that the emphasis is on the continuing aspect. There has been a lot of sporadic research for a long time. I do not think there has been a great deal of institutional research until comparatively recently. I am aware of the fact that the University of Illinois started a bureau in 1920 and Minnesota not long after that; but in terms of the administrative approach to the problems of higher education by research, the approach is comparatively new. I think Jim has done a very good job of bringing this out and of setting a tone for the rest of the meeting. I can not think of anything he has omitted in terms of the things we should talk about except, possibly, the difficulty of communication; Jim did not mention that. I think it is a very serious problem, but it is being overcome by meetings such as this and by the forums and so forth. It is still difficult in terms of the types of questions we are asked. For example: What would it cost to go to college? It is very hard to find out from anyone precisely what it costs to go to college. It is difficult to find out from research people because they do not have comparable studies and may not want to tell you their data for fear it will be reported out of context. From our point of view, then, institutional research, I think, will eventually have to break some of the barriers of communication. Let information out. Communicate more freely. I have been unable to think of any better way to do it than through meetings of this kind. If there is anything I can do to add to the distribution of information, I will be glad to do so. But I think that Dr. Doi has given us an excellent overall presentation.

HOWELL:

I would like to say one thing before I throw this open to discussion. We shall hope to publish the complete procedings of this conference as quickly as we can; and we will distribute them not only to you people but to a great number of other people who have expressed regret that they could not be here. As a matter of fact, we will send them to everyone whom we can identify as being connected with institutional research. We shall include in those precedings a listing of the materials that are here on exhibit. This may cause you troubles because you may get requests for information or for copies that you cannot supply. Nevertheless, we want to recognize the fact that these things are being done, even if not available for general distribution; they are available in case they need to be consulted by anyone at any time. The meeting is open for discussion. We have, according to our time schedule, about 13 minutes before we break up for the luncheon today.

SILVEY:

I have one question which I am not sure how to phrase. However, I will pose the question this way "Are there some things which we who are engaged in research are not doing which result in what we do find failing to become implemented?" I raise this question because the remark was made in Dr. Doi's speech that frequently there is a lag of three to six years after the research before the findings become implemented and sometimes the research man gives up in despondency because of this failure.

Now then, are there some things that we should do that we are not doing? Do we perform some kind of an experiment and then sit back and fold our arms until someone else puts the results into practice? Let me give you an example. About 1955, in our institution, we were posed with a problem of this kind. We had a certain amount of money which might have been used either to increase staff salaries or to employ additional staff in order to keep class size down. Our research bureau was asked to examine what had been done in the 1940 to 1955 period in the matter of class size. I cannot quote verbatim, but I believe that you will find the general statement in the Encyclopedia of Educational Research to the effect that, if there is any difference in the academic outcome between a small class and a large class, the burden of proof remains on the small class.

These facts were communicated to our staff. They were not satisfied. Our president then earmarked about $50,000 with which we would experiment on our own campus to see if we could profitably teach larger classes. The most serious objectors at that time were the members of the English Department. They had been convinced over a long period of time that one could not do a very good job if there were more than twenty students in a class. We carried on this experiment for four years and finally came to the same conclusion that had been arrived at some 75 times before. However, we now have a composition class in English on closed circuit television which has an enrollment of 150 students. Five years ago this would have been impossible. Now my question is, "Are there some things which we research people need to do in addition to finding out some of the facts?"

DOI:

The Question just asked has no single answer. My earlier reference to a lag in the use of data pertained primarily to the uncoordinated approach to institutional research. I had in mind specifically the kind of situation where a counseling and testing officer or a business officer does research but is somehow unable or unwilling to communicate his findings to his colleagues in a way that gets them placed in the mainstream of institutional decision-making. Sometimes this happens because the individual is overzealous in guarding his findings; he likes to label his stuff "confidential" or "top secret" and thus inhibit full and open discussion of the data. I have met such persons. But more often the failure of a particular administrative officer to get his research findings placed properly in the context of the decision-making process stems from the perception that others on the campus have of him. For example, a particular group whose cooperation is essential for effecting changes suggested by a piece of research may perceive of the researcher as having no business commenting on its activities. In not a few institutions faculty members take this point of view of vis-a-vis the admissions officer, or the counseling and testing officer, or the business manager. This schism between administration and faculty is not unfamiliar to you. But a similar schism can also be found among administrators, especially among coordinates whose functions tend to overlap or require close coordination for efficient operation. A study undertaken by an administrator is not always well received by his coordinates, especially if it has implications for overlapping areas of responsibilities. And these are most often the areas that need rigorous analysis.

The rate of flow of research data into the decision-making process is very much affected by these various schisms. In some instances the schisms may be so great that a self-study affecting any significant aspect of an institution may be inadvisable, and the task of making an analysis and suggesting changes may have to be turned over to an outsider.

The director of institutional research has a challenging role in that he must be able to bridge the gap between faculty and administration and the gaps among administrative units. He has to be perceived as belonging to each and to all, in the sense that he is welcomed to study their activities and to comment on them. Admittedly this is a difficult status to achieve and to maintain.

The problem of having to repeat studies undertaken at other institutions, to which Dr. Green just referred, reflects a different kind of situation. That is, it does not stem primarily from intra-institutional schisms or conflict. Simply stated, the situation is that each institutional group, whether faculty or administration, feels the need to be convinced on its own ground.

In justification of repeating studies done elsewhere on a particular type of problem, one could argue that the results of such studies are not always conclusive nor do they always suggest a clear-cut answer. One could also argue, as has often been done, that each institution is truly unique and that, therefore, a study of its own may reveal something different.

Whatever the rationalization, I don't think one can disregard the importance of self-involvement in a study which has implications for institutional change. From the standpoint of a foundation asked to support a study similar to one undertaken by another institution, the project may be correctly viewed as repetitious and wasteful of its resources. But to the institution, the study, regardless of how often others may have done it, may be essential for convincing itself of the desirability of effecting changes in practice or policy.

LINS:

It is a reasonable assumption that the central administrations of our institutions have the responsibility for administrative decisions. I think one of the problems we should face in institutional research is that we turn out elaborate reports which we put on the president's and vice president's desks and expect to have the entire report read. The president and vice president do not have time to read all reports. Accompanying each report, I think, should be a very brief summary, of one or two pages, with generalizations and/or alternatives for courses of action as you see them. I believe that the institutional research person has a responsibility to make recommendations to the administration on the basis of the research which he has done and should have the confidence of the administration to the point where the administration welcomes these recommendations and comments. These may be useful to the administration in reaching decisions.

WEST:

This has been one of the most touchy problems in the institutional research area in terms of agreement of what the research person should do. There is serious doubt in my mind as to the extent to which a research man should involve himself in policy decisions. I think the president, or his provost, is the one to make the decision, and should feel perfectly free to ignore the advice or recommendations of the institutional research man. He certainly should know about them. The real answer to this question, I think, has been given in Dr. Doi's talk, that as institutional research becomes more respectable, faculty members who have been defined as "people who think otherwise," are more apt to accept it. It has been just a little bit suspect. In those areas where institutional research is better known, there is, I think, less difficulty. This is coming. I think the answer will be when institutional research becomes as respectable as other types of research.

JAMES GREEN:

As a person who stands with one foot planted firmly in the administration and the other planted less firmly in administrative research, I would like to ask one or all of the speakers to solve Herb Silvey's question in some way. To what extent does present stir about research present a recognition on the part of education that it needs more data, or to what extent has it become a kind of status symbol to have a person or persons, or to redefine somebody's duties so that he also gets into institutional research responsibilities. Is there any substantial evidence, (and I come from a state in which institutional research, particularly on a state-wide cooperative basis has been carried on for a number of years. There is a very large number of studies from Michigan over here among the exhibits, and I think we are rather pessimistic in Michigan about anybody's willingness to accept results) that we are dealing with real willingness on the part of educational legislatures to accept results -- to even be interested in results, or are we dealing with a kind of status symbol? I think we should honestly look at this.

WEST:

I don't know whether there is an answer to that or not. I think there is a certain status involved, perhaps a negative status. The "true research" man is not now the institutional research man; he is an academic research man. This they may overcome, so I question the matter of status within the faculty. Now among institutions this would be somewhat different. I think that there is a slight status factor involved there, but I am more bothered by the nature of your question and what it suggests, that people are not interested in the data. I think there is a tremendous build-up in the need for data. This is going to hit the institutions in the next few years in a way that they have never been hit before. Decisions are going to be made on the basis of data, or no data, or whatever data are provided. There will be an increasing demand for data and I am very much concerned over the fact that this demand has now moved from the well-known bureaus of the government such as the Office of Education, so that Congress itself is now directly inquiring of institutions. A neat little twist to the inquiry adds: if you would like to have your figures included in the appropriation, you must supply the data by such a date. We thought inquiries of this type might develop and that is why we got interested in institutional research a long time ago. If you do not have good data, the decision is going to be made anyway. Incidently, we turn out a lot of data. They may not be as accurate as we would hope, but they are the best data available.

HOWELL:

Any other questions? Well, apparently the speaker and the discussants have done a good job and satisfied your curiosity. We started four minutes late and we are stopping two minutes early. We will have lunch at 12:00 at this end of the room. If you want to go out and get a little fresh air, you have a few minutes.

SECOND SESSION

Presiding: **Milton E. Carlson**, Assistant Director, Bureau of University Research, Northern Illinois University.

PROBLEMS CONCERNED WITH SPACE USE AND SPACE PROJECTIONS.

Speaker: **Richard G. Browne**, Executive Director, Coordinating Board for Higher Education, State of Illinois

Discussion: **Fred Schwehr**, Physical Facilities Specialist, Wisconsin Board of Regents of State Colleges.

James Blakesley, Administrative Coordinator of Schedules and Space, Purdue University.

James Doi, Associate Provost, University of Colorado

Coffee Break

Presiding: **Charles Brim**, Research Specialist, Bureau of University Research, Northern Illinois University.

PROBLEMS CONCERNED WITH ENROLLMENT PROJECTIONS.

Speaker: **Gustav J. Froehlich**, Director, Bureau of Institutional Research, University of Illinois.

Discussion: **Dorothy M. Knoell**, Center for the Study of Higher Education, University of California.

Robert De Zonia, Joint Staff Member, Coordinating Committee for Higher Education, State of Wisconsin.

Martin Bartels, Director of Placement, Northern Illinois University.

CARLSON:

I am rather amused to see everyone over to one side and extending way back. It is quite similar to our own faculty. Whenever we have held a meeting, there has been a great move forward at the President's request so that everyone will be close enough to hear. However, since we have this microphone, I think it will be alright. I hope that during the discussion period which follows you will all be able to hear and we will be able to hear your questions.

In order to let you become a little more familiar with our speaker for this session, permit me to say a few words about him. Dr. Richard G. Browne is well qualified to speak on the topic of "Problems Concerned With Space Use and Space Projections." He has his A.B. and his M.A. from the University of Illinois and a Ph.D. from Northwestern. His experience includes five years at the secondary school level, and twenty-four years at the university level. From 1951 to 1961 Dr. Browne was executive officer for the Illinois Teachers College Board, which governs the four universities: Western, Normal, Eastern, and Northern. While in this position, Dr. Browne coordinated numerous state studies. Recently, he was chosen as executive director of the Board for Higher Education for the State of Illinois. All of this adds up to an outstanding educator, and leader in the institutional research field. May I present to you, Dr. Browne.

BROWNE:

Mr. Chairman and friends, if I did not know that the presiding officer was expected to make this kind of introduction, particularly when he began by saying that I was well qualified for this topic, I should have stood up and shouted my indignant negative. As a matter of fact, I can not imagine why I should be asked to do this. I read Mr. Howell's letters in which he said that he hoped I would make some informal discussion of the topic, but frankly I misread this and I thought it was uninformed discussion of the topic, and that is the basis on which I accepted this. Then when I found that I was going to be surrounded by these experts, and certainly the most distinguished expert in the country in this field, I was more than ever certain that I should not be here at all. However, this morning I figured out why I should when I listened to this interesting and comprehensive discussion of the historical development of institutional research. I wanted to believe that I am here because I was once director of institutional research at an Illinois institution, - very recently in fact. I was appointed to take office on January 2, 1962. I was dismissed from office on January 18. I think that is the record of the shortest tenure of office any director of institutional research ever had. The circumstances of this gave me very little familiarity with it. In fact, during those eighteen days, I spent most of my time, as I walked about the campus, trying to answer the question that the faculty members raised. "What is that job anyway?" If I had heard these papers, that were given this morning, at that time, I might have been able to answer well enough to have held my job somewhat longer. I did manage to secure a typewriter in the office. I did not get anybody to operate it, but this was because of the staffing of the department; and the typewriter probably has been moved away by now.

Because last September, after having completed ten years as executive officer of the Illinois Teachers College Board, and having passed my sixtieth birthday, and having acquired a substantial number of years toward our university retirement system, I decided to become an old age pensioner; and for four very wonderful months I had nothing to do except to enjoy my annuity. Then the president of Normal University said that I ought to be teaching a little. He would give me a course in government and a part-time salary, a very small one because I wanted to keep my pension, and he was not allowed to pay me much. Then he said this would not be enough for me to do, and as a kind of an after thought I could be Director of Institutional Research. This began on January 2 and it ended very shortly after when the Illinois Board of Higher Education asked me to temporarily assume this other post. I did feel a commitment to teach this course in government and I am committed, so I will not be able to be with you tomorrow because this class meets on Tuesdays and Fridays and I feel I ought not to be absent from it. Until June, instead of having no job at all, I have a job and a half or a quarter let us say, and I am not very happy about it. As a matter of fact, I am particularly unhappy because my work with this new Illinois Board of Higher Education consists chiefly of the introductory duties of recruiting a staff and finding office space and what not which is the most arduous of all, I think. I may say I have not been very successful either in any aspect of it. I am almost willing to put in a commercial here. If you have some real good suggestions, or any of you would like to get away from where you are and want to work in Illinois, please speak to me at the close of the meeting because we have need for some professional help.

During the ten years I was with the Illinois Teachers College Board, (those years were the years of expansion and growth) I was greatly comforted by the comment that Professor Doi made this morning that one result of institutional research and planning is not necessarily economy but expansion. This really salves my conscience, because I remember, when I became the executive officer for the Illinois Board in 1951, the biennial budget to operate the four institutions was only some $13 million; and when I left it, it was up to $47 million. I should add, however that our enrollment in the four institutions also grew from 6,400 to more than 20,000, which would justify a portion of that increase. I also found myself a political scientist by trade doing a great many things I was not prepared to do; among them, construction of these buildings, the building where you met this morning and this one. A half dozen others on this campus, and more on other campuses were constructed during this period and I am rather proud of the fact that I had a part in it. I ought to add that I mortgaged the State of Illinois about $32 million to build some of them, like the one you were in this morning, which was built with revenue bonds with a little help from the Housing and Home Finance Agency and so on. But I found myself necessarily involved in this matter of space.

In October 1954, the Illinois Joint Council of Higher Education, which consists of the six State University presidents and some other of their staff members, constituted a committee to try to alert the people of Illinois to the need for consideration of the increase in enrollments that were certain to occur in our institutions. I became chairman of the committee and one of the projects which that committee carried out was the analysis of space use in those six institutions. The job was so badly done that the committee decided to bury it, but we were encouraged to do it again a second year in October, 1955, and we think we did it somewhat better the second time. We did it again in 1960, and I was not chairman at that occasion, so that was the best job of them all. The space analyses were made, of course, by the staff people in the six institutions. Dr. Howell was primarily responsible for the study here at Northern, which all the way was a model and a pattern for all the others in scope and accuracy. But we did, or I did, learn a little about the analysis of space, and it may be that we gained something from it. I am almost certain that we gained a few things. I am not convinced that these studies were responsible for our major achievement of the decade, namely the persuading of the legislature, the people, and the Governor of Illinois to approve a $195 million building bond issue November, 1960, and which the universities are now in a process of spending.

The space studies helped, I think, because the space studies showed that space was being heavily used and we were able to document our claims to the general public, and we were able to show that the level of space use had become more burdensome in the five year interval between the 1955 and 1960 studies. In addition, we were able to show that a substantial amount of the space we were then using, and some of which we are still using, was obsolete and inadequate and should be replaced.

But in any event, whether or not these analyses had any great major bearing on this important public issue in which three or four million people expressed themselves heavily in our favor, more than two to one in our favor, whether or not this was the case, we know that as we begin to spend this $195 million we are in a vastly better position because we have some basis of analyzing what are the most urgent needs. Now I am not a specialist and certainly not an expert, but I have had a little experience in dealing with lay boards and with legislatures and I am always impressed by the fact that they tend to make anecdotal judgments or judgments based upon individual experiences.

I heard a member of the legislature last year report that he had visited a state university of Illinois at 2 o'clock on a Wednesday afternoon and found an empty classroom. This disturbed him no end and he said, "What do you need all this money for?" The general public is apt to make such superficial judgments. The newspapers often do. One newspaper reporter, from one of our Chicago papers, who once won a Pulitzer prize for good reporting, made such disastrous comments about one of our institutions that there was legislative investigation. When he was on the witness stand, under oath, he admitted that he did not know the facts to be true, and many of them he had found were not true as he had reported. The point I am making here is that sometimes on the university level we are not able to meet public impressions, public criticisms, public analysis, unless we have some kind of comprehensive, defensible, convincing data on which our recommendations are based. We had a study commission in Illinois on higher education. It was made up of men of superior competence and they had some professional staff help that was superior, and yet they made, without consultation of the universities, a recommendation that the state universities operate 48 weeks out of the year, not knowing that most of them had been doing this for a half century or more. This is, of course, a very frustrating thing. They asked us to operate our classrooms 48 hours a week. Of course, most of us are operating more than that already. We are operating some classrooms as high as 70 hours a week and so on.

I am just saying here that I begin the justification for the painstaking work that a space study requires by pointing out that the public and industry, which likes to believe itself to be superior in efficiency to educational operations and government, need to be confronted with convincing data with respect to our present utilization. It also ought to be emphasized that we have gone into this with an understanding that the facilities ought to be related to the educational program, realizing how difficult it is to predict what the programs may be next year or next decade. Yet there must be some attempt to formulate a standard philosophy that will fit. This building in which we are now meeting was constructed to implement an educational program, a program which called for a certain type of laboratory school experience. I may say they are rather unique. They were new to me and new to the governing board. We were informed that this university wished to construct a laboratory school, not for the purpose of conducting student teaching in it, but for the purpose of observation, junior participation, and experimentation, and that the student teaching provisions would chiefly be made off-campus. We were confronted with a new situation. So this building was designed for a specific educational program which this faculty, with its wisdom, had chosen to pursue.

Similarly, throughout the analysis of space, we find the existence of space presently being used, in a way that does not in any way facilitate the educational program,-often obstructs and retards it. A space study gives us some view of this. It also gives us a perspective of the whole problem of the university, a perspective as to how much is being devoted to this type of space, and how much to that. One of the most crucial areas in this respect, I am sure that you know, is the problem of office space, for faculty staff members. Unless we know where we are, it is often assumed that we can find a corner in an end of a corridor or something. Let us build classrooms and laboratories and forget about offices. But by any rational analysis of the educational program, the perspective of the entire university operation, makes it easy to convince even laymen who are not able to spend much time with it, that this is a false economy. It is a faulty use in a faulty plan.

Finally, the analysis of space seems to me of enormous importance to improve the present use of space. Because, certainly in 1955, we found in some universities an indefensible failure to to use space properly. Some buildings were heavily overloaded and some buildings underloaded. Of course, we were able to identify the reasons for this.

With respect to the procedure, I think it is perhaps familiar to all of you, and it certainly is well outlined in the Russell and Doi volume. There are certainly some standardized procedures that ought to be used and have been used in many states and many institutions. There are also some modifications that will be made to suit a particular state and particular objectives.

We started out by assuming that we were going to look at classrooms and we defined classrooms as general purpose rooms, that is rooms that were not designed or fitted for a single purpose but could be used to accommodate classes from several departments. But we found that we also had to subdivide these according to size. In our first study we took classrooms having fewer than

20 student stations. Now this, of course, again is a problem. What is a student station and how many feet ought you to have? But we, as a matter of rough calculation, just said that if there were 20 chairs in the room, it had 20 student stations. Maybe you could even put 2 more in and make it a higher category, maybe you even had some empty room at the back, but we found that this was not common.

Those under 20 are what we would normally call seminar rooms, of course, or conference rooms.--Then from 20 to 34, 35-49, and 50-99, 100-199, and higher and so on. Of course, we are puzzled by some of these things, like auditoriums such as this, lecture rooms, gymnasiums, and playrooms that are sometimes used for lectures. Many of our institutions have been improvising. We found history classes being taught on the bleachers of a gym. But this space had to be considered somewhere, it had to be analyzed either for general purpose or a specialized purpose.

In the same way we examined laboratories which were clearly specialized and could be used for only a certain purpose. We made a calculation as to how many hours per week each room was in use, each scheduled use. And, there again, we have a problem of classification; what about a scheduled use that does not involve college credit, or does not involve academic credit, and yet, the room is assigned for some purpose, such as a meeting of the debate club or the dramatic society or some other activity? If it is used regularly, can you count it?

We had to decide those things. We had to attempt to achieve uniformity in our classification. How many hours per week is each classroom in use and what is the average by building and for the entire campus? In the case of the University of Illinois, where we found geographical problems, we had to divide the campus into three areas (central area, and then a north and south) because distance was so great, we could not expect to have general purpose classrooms in full use in the extremities of the various extensive campuses. We made other such decisions in our committee. Dr. Howell will remember more of them than I do.

After we had obtained our hours per week use, we also examined the percentage of full use by the hours of the day and the days of the week so that we could determine that our seminar rooms on Monday at 8 o'clock were used 88% of the time, and at 9 o'clock on Monday they were used 90%, but on Tuesday they dropped down to 65% at 9 o'clock, and so on. We could analyze those variations that come about in the scheduling of classes, the difficulty of two and three or four hour courses.

Three of the six Illinois universities are on the quarter system and three are on the semester plan, which further complicates the problem of space use. We found those on the quarter system, generally, were operating at 80%, and practically all had empty classrooms 1/5 of the time. Because they generally taught the courses four hours per week, and they had certain float days when nobody was in class, none of the rooms were in use. This is not necessary, but this was a pattern which had developed and some changes have since been made in that pattern.

After we had done this with all the different kinds of classrooms, we did it with laboratories and then we took up office space. We listed there the number of offices in each department. For example, here was one institution where the president had two offices, the business office had seven. That is a proper distribution of function, I think. The president had two offices with a total square foot area of 320 square feet, they had four stations, that is they had places for four people to sit at desks or work; they had three full-time and two part-time people employed as a full-time equivalent of four and so on. For each department we had this kind of an analysis for the number of offices, their total area, the number of stations, the number of people, full-time, part-time, and FTE who were using them.

Then we took the room use related to capacity, a listing for each classroom and each laboratory, giving the room number in the building, the square feet it contains, the number of student stations, the square feet per station, and the average class size of the classes regularly scheduled for that room. We calculated some averages there.

We also made a survey of our library reading rooms. Some of you may have noticed the building going up on the campus here, which came about as a result of this survey, and we found that NIU was sadly lacking in space in the reading room. The stack capacity was reasonably adequate at that time. It has since been expanded. But the reading rooms were far below any reasonable standard, and this was discovered by means of this survey. We have here for every library reading room the area, the number of stations, and square feet per station. This, of course, is related to enrollment, to library use, or, let us say, hoped for library use; and there is some basis for determining needs.

One of the most interesting things that we did was a listing of temporary and obsolete buildings. This listed the buildings which were of frame and wooden construction. We had a good many of these on one campus, and we had some of them on virtually every campus. We, I believe, succeeded, during the five year interval between the two space studies, in eliminating all instruction in wooden buildings on three of the university campuses. We were not able to eliminate the other three. We hope to, with this $195 million bond issue, get rid of all of these obsolete buildings. This may be too hopeful but it is a goal. We also looked at the obsolete buildings. For every obsolete or temporary building, we had this information: its name, how many classrooms, how many offices, the date of its final use, when it appeared the building must be abandoned, the reason for classifying it as temporary or obsolete, and the total floor space in square feet. We have a building listed here, for example, which was constructed in 1885, condition poor, not built of fire resistant material, contains eight classrooms, four offices, should be abandoned in 1960. We did not quite make it on this one. (This was not on this campus.) It contained 14,500 square feet of space. This technique, as I say, is not particularly desirable. There are many good techniques, and they all, in general, seek to accomplish this standard purpose of trying to find out about your space.

We tried to do a second survey and use relatively comparable data for six institutions. Since one of those is so vastly different from the other five and the second one different from the other four (all of them different in a way), this was not an easy task. The difficulties arose in the classification, the decision as to whether you count this space as a laboratory or a classroom, whether you list it or not. The first time around we even had some refusals to list all the spaces. I remember when the provost of one of the universities turned in the list from that institution at a committee meeting, and I, being familiar with that campus, said, "Well, wait a minute. You've got nine seminar rooms in your library and they have folding doors. They can be opened up into sizable classrooms, any combination of 1, 2, 3, or 4, and you don't list them at all." He said, "No, they don't belong to the university; they belong to the library." This was the answer. And he meant it. He didn't dare assign classes in those rooms. He said he tried it once and the librarian made so much trouble about it, he quit. So they left them vacant after that. They belonged to the library. They did not belong to the university. Well, I found the same thing true in the gym, where there was a classroom that the physical education people owned and nobody else could have classes there, even when it was empty, even though it was pretty well located, even though it was suited for other classes. And I found this true of the mathematics department and, I'm ashamed to say, even the department of social sciences. They felt that they owned certain buildings, classrooms, and offices, and nobody was to have them. Well, we finally got them listed. It was a little difficult to do and we never did do what we threatened to once, that is, to employ an outside firm of auditors to go and measure the buildings. We finally did get some data on the total square footage from the architects of the building and we insisted that most of that be accounted for somewhere, used by somebody. There is a difficulty in scheduling and non-scheduling, a difficulty in classification. And many institutions have developed patterns in which they permit certain rooms to be kept free for non-scheduled purposes. There are also changes in use and, of course, there are these various vested interests.

It is true, and I don't want to be critical, but I do want to recognize that each department, each college, has certain distinct features. Each institution has variations in its programs which are reflected in its space use, and its space needs. Within each broad classification, there are substantial differences in the type of facilities. These differences make absolutely uniform standards unworkable or at least difficult. Some space is designed for such specialized uses as to make any conclusion at all subject to some doubt. Laboratory space cannot be used interchangeably and cannot be used as heavily as general classroom space. Our committee did, however, go to the six presidents with some recommendations and some of these were adopted, more or less.

I want to close by pointing out what some of the possible results of the space analysis might be. We recommend, I find here, that each institution should centralize in one office the responsibility of scheduling all classes and all non-credit use of space. In order to do this, we said, the cooperation of department heads is needed. That is an understatement! The pattern has developed in some institutions of letting the department head make the assignments for certain rooms. In centralizing this into one office, we found difficulty. It was accomplished in some of the institutions with beneficial results. Schedule as many classes between 12 noon and 5 p.m. as you schedule between 8 a.m. and 12 noon. That is, in a five hour stretch starting at midday, schedule as many as you do in a four hour stretch previous to midday. I think this is not unreasonable, and this was our recommendation. Schedule one group of three hour courses for the institution on the semester plan, for Monday, Wednesday, and Friday and another group on Tuesday, Thursday, and Saturday. Or use the Saturday morning hours in some other manner. Our analysis revealed that some institutions are not teaching classes on Saturday at all. We urged that this be done, that this consideration be made, of using all space at least until noon on Saturday. I know what the obstacles are, but in a time of desperate [illegible] seems evident that it ought to be tried. Increase [illegible] m., 12 noon, 4 p.m., and 5 p.m. Schedule more c [illegible] Examine the effect of increased class size on [illegible] program, a subject which was dealt with this morning. Correlate the section size of classes with room capacities.

Here again we found a rather startling thing. Most of our classrooms were too large for the classes that were actually put in them. We needed more small classrooms and in places where we had two we should have had three. We should have had better scheduling. On the other hand, here at NIU, where their budget was not growing as rapidly as their enrollment, they had no choice when they couldn't find money to add staff, but as their classes got bigger, they needed more big rooms. They did not have enough large rooms, because they were increasing class size at an abnormal rate. Well, we recommended that consideration be given to scheduling the double period laboratory courses to meet not from 1 to 3 and 3 to 5, but 12 to 2, 2 to 4, and 4 to 6. Or, in some cases, meet from 12 to 3 and then from 3 to 6. We were trying to gain another laboratory period in the afternoon, by scheduling through the noon hour.

We think that we made some improvements. Some of the institutions accepted these recommendations, or accepted them in part. We believe that there was better scheduling of classes; the record showed it, in fact. There was better use of the so-called "off hours" and better use of the "off days". We think we also minimized the fragmented ownership of space. We think that we identified, to some degree (I would not say wholly adequately), the space needs of the future, and helped the institutions in their planning of future construction.

The problem, of course, is complex. It is with us, and it is one that I hope will seriously engage attention. I think that it is a fruitful plan from the point of view of efficient operation, and I think also from the point of view of public relations. But I think I am most interested in it because, as we look at this, we begin to see more and more what the educational functions of the university are, and we try to make the space serve those functions, to design it to serve those functions. When this results in a building that you can look at and say "This is exactly the kind of building in which to do the things we want to do," you can be very happy and very proud.

CARLSON:

Now that Dr. Browne has set the stage so nicely, I would like to go directly to our discussion leaders and we will follow the same procedure that we did this morning, in having them make a few comments, and then we will open it up for questions. I am sure many of you have a number of questions in mind and we will give you an opportunity very shortly. The first of our discussion persons listed in your program is Mr. Fred Schwehr. Mr. Schwehr comes to us from the Wisconsin State College Board of Regents at Madison, Wisconsin where he holds the title of Physical Facilities Specialist. He has a B.S. from Stout State College, Menomonie, Wisconsin, and M.S. and Industrial Engineering Degrees from the University of Wisconsin. He has taught both at the secondary and university levels, including a period from 1952 to 1960 when he was a professor in the College of Engineering at the University of Wisconsin. Since 1960, Mr. Schwehr has concentrated on physical facilities planning ranging from site development to turning the key in the door. In addition, he has been and is involved in many major remodeling projects. May I present Mr. Schwehr.

SCHWEHR:

Thank you Dr. Carlson. Ladies and gentlemen. First, may I preface my remarks by saying, Wisconsin has no space-use or allocation problems. That is, none that cooperation, common sense, hard work, and 100 million dollars would not solve. I think that we are all cognizant of what Dr. Browne presented, methods they use in Illinois, and I would like to share with you a few of the methods that we have used to gain our ends in higher education and for the people of the state to present a group of facilities that we can not only be proud of but which stimulate and perpetuate education.

As you notice, I dragged this briefcase over here with me, but on the way over through the rain I decided that the data was all wet anyway. So I will share with you only the major observations of methodology which we think have been successful for us. The first one, Joe Lins stole from me this morning, but being first he had that right. The overview for the administrator or legislator who has neither the time in his busy schedule nor, if he looks at his itinerary, a place to even pick it up off the desk. The overview is important. Now, the overview being verbal, some will read it, the administration will read it and grasp it. For the general public who are involved in making major decisions and in trying to listen to you as you present your facts, I think that we have found the graphic approach, by use of graphs, pie graphs, colored slides, and so forth, has been very effective. I do feel that in some respects our study went overboard a little bit on the written part. If you present your data in such a manner that you confuse the audience to whom you are presenting it, you have lost all sympathy toward the end to which you are working. If they are confused, in other words, they are going to vote against you. This can occur very easily by using language which cannot be readily interpreted and which must be studied over and over again, or graphic analyses which are so complicated, such as algebraic type of graphs, that a mathematician has to study in order to interpret them. Then you are in trouble. You are not going to get any place.

I think this is illustrated by a telephone ringing in the hospital and a young lady answering and she says, "Yes?" The other voice says, "You have Mr. Finklestein in Room 606?" She says, "Just a moment," and goes through her card index. "Yes, we have Mr. Finklestein in 606." "Well, how is he doing?" "He's recovering well." "What kind of a diet is he on?" "General diet." "When do you expect him to go home?" She says, "In about two weeks. By the way, who is this?" "Well, this is Abe Finklestein in Room 606. These darn doctors don't tell me a thing."

I think we cannot separate the quantity of space from the quality of space. We, at the state colleges, have done a quality study, room by room, of our nine colleges in every building and have coupled this with colored slides. We have been rather successful in doing two things: (1) we bridged a gap between the board room and the campus which may, at the time, be many miles away or you may be on the same campus dedicating a new building but have not had time in a heavy schedule to get a hundred yards away to the situation which you have been trying to bring to their attention. The colored slides have a very strong impact when presented with a verbal presentation. We have had that experience. I think that we can say that our people have not only become better acquainted with our campuses, but they have seen some of these derelicts that we have in higher education. You will have to refer to quantity and quality of space as Siamese twins. You cannot separate them; it is impossible. When you look at some of these structures, you ought to be thinking not only in terms of so much brick and mortar, as some of us do.

I think here is another item that, perhaps, the people in your business ought to take a look at, and which we do not seem to have a lot of information about. That is, what is the effect of the environment on learning? Many of our students come from very fine high schools into higher education institutions which are not only structurally, but educationally, beneath the type of facility from which they came. This might be an area we should study.

Sharing methodology, I want to bring out one other thing, that of long-range planning, which was mentioned this morning. We have gone to the three-dimensional approach for all of our campuses. We are in a process now of building models for all campuses. The minute you put something on paper, and publish it, or you build a model and bring it out to the public, that is it. This is fact. You have the problem of conveying to your audience, or the public, or the legislature, or whatever it may be, that this is only a guide-line to the future. I think you will find that the critical needs of any campus can change very rapidly within a year or a semester. We build priority lists, build long-range plans, and we forget to spell out in big red letters that this is our best estimate at this time,.that these areas of critical need will change. A look at the field of engineering: in one year the enrollment will be way up; very shortly thereafter, it drops. You have to put a stop-gap in there somewhere. The only way you can do it is to tell people again and again, once it is on paper or on models, that this is your present plan. It sticks in their minds and you have to create the feeling in their minds that at this time it is your best effort . . . subject to change as the educational scene changes.

The Wisconsin Study, I think, has two check-reins in it that may be of interest to you in controlling space utilization: We have what we call a building data chart which summarizes by building by room the assignable and unassignable area in each building. That chart is then again broken down into active instructional space including classrooms, laboratories, offices, auditoria, library, and other active instruction areas - and that would include preparation room serving two or more labs. Then we break down into non-instruction areas. In the non-instructional group we would include physical education, laboratory schools, research, section of public service, auxiliary enterprises, and the like. Probably in unassignables we would include those inactive areas which are those condemned, under construction, or remodeling. And finally the non-assignable which would be hallways, stairwells, restrooms, and custodial service areas.

Preceding all this, we have a form that fits every one of these categories with a definition for each category and a step-by-step procedure of how this must be filled out. We have nine people who have been assigned at the colleges as a team to work with us. They fully understand all definitions at least we thought they did. And still, we had problems.

The problems were in terms of interpretation. The written word is interpreted many, many different ways. We had to go through every one of these again. We're doing it again for the current study which the Coordinating Committee will publish very shortly. We know how we wrote those definitions, and they read them and they interpreted them.

Now, everyone of us has a feeling that we should compare ourselves with someone else. We at Wisconsin believe very strongly, whether we hurt ourselves or not, we should be on the top of the table with everything, present our data and the facts.

One problem is that every time I pick up a study I have trouble making comparisons, but legislative groups demand comparisons. Perhaps this is another area that people in institutional studies should be thinking about, and that is the definition of space in its various classifications of being comparable. There are several places where I can point out differences in definition of gross, net, and assignable space by picking up another study. An example is the gross-net, this is the gross assignable, and then this is the gross. John Doe public reads and has no idea what this is. If you have been in the field you can sift it out, but then the public picks up these comparisons. They make these comparisons, and we're all in trouble. This has happened a number of times in the press as you know, and in magazine articles. One of the worst things is that the derivation of this data, the definition of what we're speaking about has not been given and so it is meaningless, if not worthless. We have tried in our study to think of everything. One thing I can guarantee you. If you don't do any work, you're not going to make any mistakes.

CARLSON:

Our next discussion person, Mr. James Blakesley, is Administrative Coordinator of Schedules and Space at Purdue University. He has held this position for the past twelve years. Needless to say, he has dealt with many problems in this area. He has his B.A. and M.A. degrees from Purdue. His major responsibility at Purdue involves utilization of resources through the management of academic scheduling of students, staff, and space. This includes the assignment, use and modification of existing space, research, staff loads, and the forecasting of future staff and space requirements. He is specifically noted for the development and adaption of the electronic computer to the scheduling of students to classes. May I present Mr. Blakesley.

BLAKESLEY:

Thank you very much, Milt. It is a pleasure to be here with you today. Since I represent in part the State Supported Institutions of Higher Education in Indiana, and in particular Purdue, I feel it appropriate to begin by describing the "conditions" under which institutional research is conducted between the four state-supported institutions, namely Ball State Teachers College, Indiana State College, Indiana University, and Purdue University.

Some years ago, due to the foresight of the Indiana legislature and gentlemen like President Hovde and Dr. Wells, a law was passed requiring the four schools to work together in formulating their budgetary needs, and to make a joint request upon the legislature. Prior to this time, each of the institutions made separate requests for funds. A prime by-product of this mandate has been Institutional Cooperation, which has resulted in a stimulus for Institutional Research. During the past twelve years, the gentlemen with whom I have worked have grown to know each other and to exchange data willingly. This cooperative atmosphere is most refreshing and is a significant change from the secretive, guarded conditions we were bound with years ago. It should be noted, however, that even though the institutions have been mandated to cooperate, each institution's autonomy has been maintained and each will strive for perfection in its chosen fields. I would heartily recommend this collective cooperation for all systems of higher education.

One example of collective cooperation resulted in a most significant study of space utilization. This study is now legendary for it went far beyond bounds of normal studies. It studied the utilization and need for plumbing facilities in academic buildings, using the Operations Research Technique known as the queueing theory. The story of the study goes something like this:

> One day in April 1954, eight men representing Purdue and Indiana Universities met in a conference room. Their problem: new building construction.
>
> The forecast enrollment for Purdue of students for 1960 was up to 16,000, half again as many as the present student body. New buildings were needed, but construction costs were high, state funds limited. Where, the eight men asked themselves, could construction be shaved? A similar situation also existed at Indiana University.
>
> The April meeting had been called to discuss a possible source of saving: plumbing costs in present buildings were high. Could this expensive category of costs--wash basins, toilet facilities, washroom space--be trimmed?
>
> Some observers had noted that present washrooms were seldom filled. Everywhere you went, in classroom, administrative, and lab buildings, there was always a handy door marked 'men' or 'women'. Might not this distribution of washroom facilities be too generous in light of actual use?

It was a controversial question. Heated debate filled the conference room. No one had even collected data on washroom use. To resolve the dilemma, the committee would have to break with tradition--and make an operations research type study of the most personal student habits. But that was the way to a clear solution, so the committee set to work.

First, a criterion of adequacy was set up for washroom facilities. "A washroom facility is not adequate," the committee decided, "if a student must wait so long to reach or use a crowded washroom that he or she will be late to class." The period between classes is ten minutes.

Next, the cooperation of a large sample of students was enlisted to aid in the collection of data. Male and female students were to maintain record cards of where and when they used Purdue washroom facilities for a test period. A statistical sampling plan was designed so data collected could be organized efficiently. The Statistical Laboratory at Purdue developed a mathematical theory of the problem in waiting line or queueing theory form so the probability of various waiting times at washrooms could be computed, once the data had been collected.

Then the experiment was begun.

Results were informative. For examples, males at Purdue used urinal facilities about five times during a twenty-four hour period, used water closets between one and two times a day, and used lavatory facilities somewhat over five times a day. But peak use occurred only at 8 a.m., 12 noon, 6 p.m. and 11 p.m. Moreover, the probability of any delay at classroom or laboratory washrooms was very small indeed. Students proved to be creatures of habit; they preferred to use their dormitory facilities at peak hours, instead of those at class. A count of washrooms and students showed the ratio of facilities to students was one to thirty-five; the new statistics showed that the proper ratio at Purdue was about one to a hundred and thirty-five. In other words, there were too many washrooms on campus, particularly in schoolroom buildings.

The committee met again to look at the survey's results. Their discussion was again excited--but for a different reason now. They saw the possibility of reducing washroom facilities by a factor of four in new designs, still maintaining adequate washroom service.

When the test results were checked, new specifications were drawn up for proposed buildings. The money saved from reducing washroom facilities was allocated for more and better classrooms. So, the washroom problem had been solved, and in turn, its solution solved part of the larger problem--how to get more money for new construction.

Belatedly, someone asked why the old buildings had so many washroom facilities written into their specifications. The answer, it turned out, was simple. The old washroom facility to student ratio of one to thirty-five was correct for grammar school children, not college students.

Similarily, in an effort to reduce capital expenditures (in a more conventional sense) Purdue has decided to experiment with a 55-hour academic week--to shift from its past pattern of 8 to 12 and 1 to 5 Monday through Friday and 8 to 12 Saturday--to a 7:30 to 5:20 Monday through Friday and 7:30 to 12:20 on Saturday pattern for campus scheduling for the academic year 1962-63. If programs were to continue in an effective and stimulating environment, many areas of the campus would require twice the amount of space now used in the next ten years. In addition, many staff members were finding it increasingly necessary to stay at home in order to effectively use their time in place of fighting the distractions of crowded offices. A partial solution to this problem seemed apparent: to make better use of the best classrooms and laboratories by expanding the academic week, thereby obtaining the necessary time to re-orient our building program to adjust to the dynamic changes in the various curricula.

In addition to the above, a significant research effort is being made to simulate future requirements and to construct an optimum schedule for staff, student, and space on a large scale computer. The project has been approved and work has begun. As in many areas of responsibility, there is a very fine line between administration and educational decisions, and both are inter-related and dependent upon each other. We know that the conditions we plan to run on the computer will have value to both areas.

As an example, it has been assumed that determination of class size, decisions on course offerings, curricular content, etc., are educational policy decisions; whereas, the schedule of classes, the assignment of staff and facilities, the accounting, inventory and purchasing procedures, etc., are administrative decisions. The primary distinction being that the output of the total educational process (the assimilation and utilization of knowledge) is stimulated, controlled and directed through the educational policy decisions whereas the resources made available to aid in the educational process are organized, scheduled, and maintained at minimum cost and maximum utility through proper administrative actions and decisions.

To modify the class size of a course would be an educational decision. However, decisions of an administrative nature would of necessity be required to adjust to these changed conditions.

It should be fully understood, however, that computers do not make decisions. The computer may, however, following a logical program with varying inputs and changing conditions, provide answers to questions that would serve as guides for policy decisions.

These and similar programs will permit the deans to evaluate proposed decisions within their academic-administrative framework. Can larger classes be taught without decreasing course selectivity (increasing conflicts in course schedules)? We were confronted with this problem in planning the Fall 1962-63 schedule, when a department decided to go to sections of 400. They had been teaching sections of 40 in the past. We didn't know if this major revision in class size would be possible, so we simulated it on a computer. We now have one auditorium that is being occupied--some 40 hours a week--with sections in excess of 400. We're hopeful as a part of this research, that we can get answers on what actually should be space standards or factors and to be able to document all academic space requirements for future years.

Now it is important, however, not to over-emphasize space utilization. You should have noticed that I have talked about staff and space utilization, as though they were one and the same; they are. We have been asked to cut laboratories in half in order to increase the utilization of the labs and conserve space. We proved that this doubled the operating costs and the request was denied. (Mr. Arden was a part of this study. He likes to call this technique - utilization of resources.) So, be careful of misinterpreting space studies. Be most careful. Do not over-emphasize space utilization.

As a result of these and other past experiences gained during the last six years in scheduling students to classes using an electronic computer, we have sufficient data now to know that there is little reason for what everyone would like to call "fading afternoons and lost weekends"-normally associated with the use of facilities. Four o'clock classes can now be filled just as well as nine o'clock classes. The same is true of Saturdays. Last fall more than 10,000 students had one or more hours of classes on Saturdays. Distribution of the courses throughout the academic week and proper scheduling of students to these classes is all that is required. As a result, the basic criterion for schedule planning-increased course selectivity-has been fulfilled. There is little need now to offer elective courses at popular times such as MWF 9:00. Now the students are selecting courses for their content and not the time of day in which they are offered. New students admitted to the University are now handed their schedules as they were in high school, but far greater latitude in selecting the courses they wish to take. The Dean of Men, Dean of Women, and the academic counseling staff are doing a tremendous job. The student is not aware that time of day was of prime consideration in the past--only that selection of courses is now given prime consideration. He accepts his schedule.

Because of this ability to construct improved schedules and to schedule students in an effective manner, we do not think high utilization rates are unattainable. We do not feel, for example, that the standards set for California institutions will be difficult to exceed. On the contrary, we feel that we will be able to operate with much less space than their standards permit. From a scheduling standpoint, we have found that the fewer the number of classrooms, the better the class schedules. Too many classrooms permit courses to be taught at only preferred times causing many conflicts in scheduling. Too few classrooms, on the other hand, require a positive distribution of classes during all hours of the academic week and minimize conflicts in hours between courses. Improved space utilization, therefore, is only a matter of proper planning of facilities and improved scheduling techniques.

Still other areas are being explored. During the past year, the four schools have cooperated to develop a model for estimating future academic facilities, included are research and library facilities as well as office, classrooms, and laboratories. This model is a far cry from the conventional credit-hour-load space-utilization studies and encompasses a number of new space factors and ratios that are much more meaningful and useful. The study we know has limitation, and each of the members: Mr. Ed Bocko, (Indiana State College), Mr. John Snedeker and Phil Conklin (Ball State Teachers College), Mr. William Fuller (Indiana University), and myself will welcome constructive criticism when the study has been documented and distributed.

Thank you very much.

CARLSON:

There aren't too many people who have the honor of being first and then also getting in the last word, but Dr. Doi has the distinction today.

DOI:

Dr. Carlson and I discussed at the beginning of this session whether or not I might have anything to say. I asked him to put me last. There's a degree of security in being last in a situation like this.

I'd like to pick up where Jim Blakesley started--namely, the possibility of overstressing efficient space utilization. When a person prepares a guide of some kind, he oftentimes wishes he did some things a little differently or didn't do it at all. I have experienced such after regrets on the Manual on Space Utilization. The Manual that John Dale Russell and I prepared was a very simple kind of thing with a very simple message. Its purpose was to call attention to the possibility of making more economical use of existing physical plant facilities and to suggest how a study of space utilization might be made. It was not intended as an attack on the administration of higher education or as a method for revolutionizing our concepts of physical plant use. Nor was it intended to suggest that colleges and universities should cease to build new buildings. But some people have attributed these things to the Manual.

It should be recognized, however, that on many campuses there are opportunities for effecting more economical use of instructional space. Institutions have found that faculty members are much more flexible about class scheduling than they were thought to be. They may prefer not to teach classes during the late afternoon hours, but when asked to do so, they have. Also administrators have found that a department will cooperate in sharing classrooms with other departments which, over a period of years, had come to be regarded as exclusively for their use. And on the basis of a space utilization analysis, some institutions have converted a number of classrooms into faculty offices, thus reducing the ratio of the former to the latter and forcing a higher rate of classroom use.

Concerning changes of this kind, one should have no regrets. But I have observed at least one instance of where an institution became so obsessed with the notion of economical space use, that it failed to take into proper account the fact that growing enrollments and changes in functions require new buildings. The time and nature of the latter is especially difficult to predict with any degree of accuracy, and an institution that seeks to attain a high rate of classroom and laboratory use may wake up one morning to find that it has to have space for a newborn function.

Let me give you an example. A state university not too long ago completed plans for a major expansion of its library facilities. This expansion was supposed to take care of its library needs up to 1975 or 1980. Then quite unexpectedly it found itself named as a regional repository for a very substantial series of scientific publications, a proposition which no self-respecting university could reject. Fortunately, the plans could be revised. But unfortunately, the university had waited so long to decide that it was making appropriate use of all available library space before launching an expansion, that it lacked appropriate space for housing the new materials. Makeshift space was devised, but this took place at the sacrifice of some other function.

This is but one example. I could cite you several other new programs that developed during the last several years at this same state university, to house which it had faced and is still facing considerable inconvenience. The difficulties stemmed from the simple fact that existing facilities were being so well used that it had no room left for new programs. One might argue that such programs should have been planned for. But what institution can predict what new center or institute is likely to be placed on its campus three to five years hence, which is about the time required to design and construct a new building?

Thus, uncommitted space may look bad on a space utilization chart, but in a growing institution it is absolutely essential. I like very much the idea of what one state university calls a "surge" building--a building designed to provide temporary facilities, on rather short notice, to new organizations. As the new organizations become stabilized and their survival assured, permanent facilities are constructed for them.

Another oversight stemming from overconcern with economical use of existing space is the failure to identify and to plan for facilities which the institution does not have but badly needs. Here I am not referring to the need for replacing outmoded space with new facilities or for obtaining additional space to meet overcrowded conditions. Needs of this kind are fairly easy to identify in a space utilization analysis. The kind of situation I have in mind is where a particular department, through inertia and mediocrity, has failed to keep pace with recent developments in its subject-field and is only dimly aware, if at all, of the need for new facilities. At one time or another such a department may have had a few men who were aware of the need, but who, having become discouraged because of the lack of facilities, left for greener pastures.

Most administrators feel that they have more than they can handle trying to evaluate and meet the needs of aggressive departments that always seem to be clamoring for more space and improved facilities. But a greater challenge to administrators is to stimulate lethargic departments into assessing their needs and joining in the clamor for improvement. Frequently their improvement is contingent upon bringing in new blood, but the latter may not come in the absence of up-to-date facilities for teaching and research.

The point here is that concern for new space needed for the fulfillment of institutional functions is as important as the concern for making economical use of available space. The goal of economy in use of space should never be pursued in a way which inhibits the sound growth of the instructional and research programs of an institution.

CARLSON:

Thank you Dr. Doi. I would like to open this session for questions, or comments, and if you would like to direct the question to some particular person who has spoken, would you do so.

QUESTION:

I would like to raise a question whether laboratory space could be utilized as heavily as classrooms. And I would like to see whether anybody else joins me in taking exception to this. I can not defend it.

SCHWEHR:

I would like to mention that since our governing bodies questioned the relatively light use of laboratory space as contrasted to classroom space use, we pointed out that since there is no special space provided for research by faculty in the places they prefer, we rather expect our professors to use these laboratories somewhat on their own and not for class use only. I would like to mention too that because this was a point raised by our governing bodies, we also pointed out the inflexibility of laboratories as opposed to classrooms. You have to allow time to set up to demonstrate an experiment if you were not running concurrent courses so that you could use the same experiment all the way through. Secondly, we pointed out that there will be and there are several laboratories on nearly every campus represented here, which will lie idle for a semester but are very vital to the total curriculum. They are a must. But they can not be used all the time. They are a part of specialized courses and we can not do without them. This is one of the toughest things to sell anyone walking through the building and seeing a beautifully equipped dairy science lab, for instance, standing idle, with beautiful equipment, and we say, "But, we are going to use this next semester." Then we had better say why.

SILVEY:

I thought about this question earlier. Blakesley raised a question and I will ask it of Mr. Doi. Mr. Blakesley pointed out the procedure they expected to try and exploit and go into and work for a 55 hour week. I believe that the standard is a 44 hour week. Do you have any feelings on changing from a 44 or 45 hour week?

DOI:

No, not at all. The primary purpose of picking a figure, in this instance - 44 hours, was to compute the percentage of possible utilization. John Dale Russell felt rather strongly that most dministrators and faculty members would not be able to grasp he significance, for example, of an average room-period use of 22 hours per week. But by converting the 22 hours to a percentage of a 44 hour week, he believed that they would more readily understand the situation. Some other weekly schedule such as 45, 50, or 55 hours could have been selected. But 44 hours seemed to be a common and reasonable weekly schedule. For this reason it was chosen for use in the Manual.

BLAKESLEY:

As I mentioned earlier in my remarks, Purdue will be operating on a daytime 55-hour academic week. Evening classes will also be scheduled to serve those in the community who work during the daytime. To add daytime to evening use would be misleading, for it is the objective of space studies to determine how well an institution is using its space for a given program. If it is a daytime program that determines our capacity, the study of facilities should be limited to the use made during daytime hours and the use of evening classes should be excluded. I agree whole-heartedly with Jimmy Doi, that space use should be based on the number of hours of either daytime or evening programs, and not a percentage utilization based on an imaginary 40, 44 or 55 hour week.

Other factors which attribute to low utilization also enter the space picture. Certain highly-specialized essential laboratories are required; and until enrollments in these new and specialized fields increase, low utilization of these facilities is to be expected. To state, on the other hand, that these laboratories will not have served a very significant and useful purpose would be quite misleading.

Likewise, to plan for the future requires building for the future and certain buildings will have lower utilization than others, for they provide the expansion space for the future. Architecturally (and financially) it is not wise to construct just for today. We must construct for tomorrow or suffer the consequences of inadequate and improper planning.

Conversely, it would be just as unwise to overbuild and to construct specialized laboratories that would stand idle for a decade at a time waiting for expanding enrollments.

PLANNING OF FUTURE ACADEMIC FACILITIES, THEREFORE, IS A SERIOUS TWO-EDGED RESPONSIBILITY!

BROWNE:

On this question of the number of hours per week, I thought I should have given you the Illinois report for 1960 on the range of hours over which regularly scheduled classes of instruction are scheduled at each of the six state supported universities. At the University of Illinois the range is 70 hours per week. At Southern Illinois University it is 78. At Northern, 68; Eastern, 60; Western, 61; and Normal, 64. Now, of course, obviously, this does not mean that every classroom is in use during those hours, but they are approaching this 65 hour schedule or exceeding it.

CARLSON:

I see that our time has gone over about ten minutes and I think we had better close this session.

BRIM:

We turn now to problems concerned with enrollment projections. I think all of us can make one prediction: that on most campuses the enrollment will increase. The big problem, of course, is how much. We know it is going up, but we do not know how high. On this campus, in looking over some of the previous predictions, I find that every one of them was a little bit low. If you look around at the building program, you will find that the results of some predictions are now being put into stone and concrete. As Dr. Howell told you this morning, we have grown to the point where we are now about four times as large in enrollment as we were nine or ten years ago. We presently have a building program which includes the buildings that are now under construction, and the buildings that should be under construction within the next two years or so. These will cost over $25,000,000. This building program is necessary because of the increasing enrollment we have had during the past few years and the enrollment that we predict for the next few years. If these predicted enrollments do not materialize someone will have a rather red face around here with all the buildings and all the money we have spent.

This afternoon we have four people who are to tell us how to predict these enrollments fairly accurately. I say "fairly accurately" because I know that at least one of them admits that his predictions are not always perfect. The first person we have to speak for us is Dr. Gus Froehlich, presently the director of the Bureau of Institutional Research at the University of Illinois. He earned his Bachelor's, Master's, and Doctor's degrees at the University of Wisconsin although he did come to Illinois to do a bit of teaching in a township high school. During the second World War he was in charge of the records and research for a special naval pilot training program. Later on, he was superintendent of the records office for the lab school at the University of Chicago. Then about fifteen years ago he went to the Bureau of Institutional Research at Illinois where he is now the director. Dr. Froehlich.

FROEHLICH:

Thank you, Mr. Chairman. The four of us who are to present the topic assigned for this period, decided that we ought to have a maximum of participation and a minimum of presentation; so we will try to limit the formal presentation as much as possible. I will present a general background and philosophy as it pertains to enrollment projections. In presenting this aspect of enrollment projections I am going to draw heavily from Dr. Lins' publication, "Methodology of Enrollment Projections for Colleges and Universities."

Miss Knoell, who will follow me, will be somewhat more specific. She will talk about some of the things being done at California, particularly at the state level, and particularly in view of changing conditions as they pertain to enrollment projections. Mr. DeZonia, who will follow her, will also be more specific. He will relate his comments to the state level at Wisconsin. Mr. Bartels, who will follow, will direct his comments more to a smaller unit.

Now then, to get us into the right frame of mind, I would like to mention a few things which, I am sure, I can say without fear of contradiction. I am, in the first place, sure that all of you who are assembled in this room this afternoon are quite cognizant of the fact that in the early 1940's this country suddenly experienced a sharp rise in its birth rate, this coming after a relatively constant birth rate for quite some time; and that, with an exception of a year or two in the middle 1940's, this birth rate has been going up and up. Although it has leveled off somewhat presently we are not sure where it is going to lead to. I am sure that all of us assembled in this room this afternoon realize that, as a direct consequence of this increasing birth rate, we have had some increased enrollments -- first at the elementary grades, then at the secondary level, and now these are being felt in our colleges and universities. This I am saying in a collective manner because here and there, there are some exceptions.

In the fall of 1961, there were 3,851,000 degree credit students enrolled in the 1,985 institutions of higher learning listed in the "Education Directory" of the U.S. Office of Education. This represents an increase of 7.8% over a similar enrollment in 1960, and it represents an increase of 32% over the enrollment five years ago. Of the 3,851,000 students enrolled in institutions of high learning last fall, 1,026,000 were first-time enrollments, that is, they were freshmen. This represents an increase of

10.4% over the year before, and 42% more freshmen than five years ago. This gives us a little bit of an idea of the magnitude of some of these enrollment increases which we have experienced. This trend will continue for a number of years.

Major buildings must appear on the drawing boards years before they are actually needed. Funds for staff to maintain these new structures must be obtained. Additional staff must be sought out in interviews. All of this takes time. Hence, the needs must be anticipated before they actually occur. This, then, brings us to the specific topic assigned; namely, "Problems Concerned with Enrollment Projections."

In dealing with this topic, we must bear in mind the fact that projections are forecasts; they are not predictions in the real sense of the word. An enrollment projection always represents an average trend during the period indicated. It is based upon the existence of a specified set of conditions or relationships, and it is a realistic projection only to the degree that these conditions and relationships continue to hold during the period of the projection. For any given year during this forecast period, one can expect to find the actual enrollment either above or below the projected trend line. However, if the period extends over a number of years, and if no major contradictory factors appear on the scene, I mean factors that were not considered in the original projection, then one can reasonably expect an almost equal distribution of negative and positive errors about this trend line; and, say ten years hence, the actual enrollment will probably be somewhat as the trend line had indicated.

In any projection there is bound to be a certain magnitude of error, due to unforeseen factors or to factors which can not be completely controlled. Therefore, all long range projections should attempt to anticipate variations by projecting not only an average line, but also, a minimum line, and a high or maximum line.

Many of the so-called problems encountered in the preparation of enrollment projections are actually not problems at all. They arise because we do not take the pains nor the effort to first study all the facets which affect enrollment projections. It is not possible to provide a series of birth data, or college age population data, or numbers of high school graduates and then apply to these sets of data some magic formula, perform some arithmetic or more high-powered mathematical operation, and come out with a valid and realistic projection. The projection of enrollment is not a statistical problem in the real sense of the word. Statistics are involved only as a tool. In any enrollment projection the statistical study of past enrollment records must be supplemented with information which is quite non-statistical in nature. For example, when one is projecting enrollments in the University of Illinois, let us say, we should know, before we do any mathematical work, what the aims and purposes of that institution are. For example, is the institution committed to a policy of selected admissions, or will it accept all qualified students who apply? Or, going a little bit farther, must it accept all qualified students who apply? Will enough housing be available to take care of all the students who might want to come to this institution? Can the instructional facilities and staff be expanded to meet the anticipated number? Are new curricula to be effected or added or are some of the currently existing curricula to be abandoned? Are there impending changes in the admissions policies of neighboring institutions which might affect the degree to which our particular institution will attract students? These are questions that are illustrative of a few of the many things which must be considered before we even start doing anything mathematical.

In this connection, I would like to cite an illustration which, I believe, is usually not found in the literature. All of a sudden we are beginning to realize that there is something wrong with our projections of graduate students at the University of Illinois. The reason is fairly simple when we look at the picture. As an institution, we are experiencing a smaller and smaller proportion of freshmen and sophomore students. Initially, it was caused by the unique birth rate situation in the state. About three years ago, and definitely two years ago, freshmen enrollments began to decrease. Added to this is the idea of a major new campus in Chicago. As soon as this new campus becomes operational, our freshmen and sophomore enrollments will become static.

What is the net effect of all this? A large share of our graduate students remain in school because they have teaching assistantships in the elementary courses. As the number of freshmen and sophomores decrease, of course, the number of available teaching assistantships will decrease. Hence this type of graduate student subsidy diminishes, and the number of graduate students also tends to decrease. Perhaps we can stop this trend by seeking more money for research assistantships. This illustration also points out the fact that those of us who make enrollment projections do have a continuing responsibility to revise them periodically. Enrollment in a particular college or university depends upon the ability of this particular institution to continue to attract students from a pool of qualified students and upon the further ability of that institution to hold its students after they have matriculated. These abilities for each institution are constituted by factors usually unique to that institution. So whatever the literature says about Institution X is not necessarily valid for Institution Y.

There are various methods by which enrollment projections can be made. One of the simpler and probably the most widely used of these methods is the so-called "ratio method." In using this method one must determine the ratio between the number of students enrolled and the number of individuals in the age population of which these students are a part. Usually this method is used to project total enrollments rather than enrollments by classes, that is: so many freshmen, so many sophomores, and so on. The ratios are usually obtained by dividing total enrollment by the total available college age pool. Usually this is defined as those being 18, 19, 20 and 21 years of age. We find out what these relationships are over a period of back history, and then apply, either the most recent ratio, or a composite of recent ratios, or a predetermined changing series of ratios, either increasing or decreasing, depending upon what our better judgment tells us seems to be the predominating factor in the case, to estimated future college age populations.

This procedure is simple enough, our problems arise when we neglect to recognize the fact that both the dividend and the divisor must be precisely defined. For example, who is a student? Do we count only those carrying a full credit load in regular classes? Do we include evening students? What about the person who takes only non-credit courses? The answer is apparent only when related to the purpose for which the projection is to be used. If, for example, the projection is to serve as a basis for a future building program, we must first determine what type of students or what combination of types will tax the facilities to the greatest degree. If non-degree students are predominantly evening students, but are taking courses in essentially the same areas as the degree-credit students (day students), and if their total number is less than the degree-credit day students, then, by all means, we forget about the evening students; because, if we provide for the day students, the evening students will automatically be taken care of.

The 18 through 21 year-old group has come to be a sort of standard divisor for most college enrollment projections. In using it as such, one tacitly assumes that the total enrollment consists of an equal number of 18 year olds and 19, 20 and 21 year olds, and that enrollees under 18 and over 21 are rare or non-existent. While it may be true that a large number, or even a majority of students fall within the 18 to 21 age range, a goodly number in most institutions will fall outside this range. And it is a rare institution indeed in which the distribution is such that there are approximately as many freshmen as sophomores, as juniors, as seniors. In other words, the divisor in the ratio method must be tailor-made for the situation at hand. The age range of the college age population need not necessarily be 18 to 21. But, by all means, whatever the range, it should be weighted by single ages in terms of the experience history of the given institution.

I know many of you in this room have data of these kinds. They are in the literature. We look at them, and we look at our own, and we find that there are differences. I need not cite many examples. Our own institution is a good example of the fact that the 18 to 21 year-old group is not, in effect, the standard range. Currently, the youngest student is 16 years of age, and the oldest student is 67. In the freshman class, where we have the youngest student, the oldest is 63. About 57% of the freshmen are 18 year olds. About 4% are less than 18, and the remainder are older than 18. So we do have an unequal distribution. Coming to the graduate level, strangely, our youngest person is only two years older than our youngest freshman. The youngest graduate student is 20 years of age. The oldest is 67.

Another item that must receive careful consideration, because it tends to be unique in any given situation, is the geographic area to be included in the college age pool of the graduates.

After both the dividend and the divisor have been precisely defined, the ratio method of enrollment projection presupposes that ratios have been obtained for successive past years. These are then carefully examined and studied, and a judgment is made as to whether to use the most recent ratio, the mean of several ratios, or a successively changing ratio, continuing a trend found to exist in the past. By using the average or the most recent ratio, one would tend to get a minimum projection, at least for the time being. All available evidence now points to the fact that the proportion of college age youth going to college will increase, rather than decrease, in the foreseeable future. By using an increasing ratio over the entire period of projection, we would get a maximum trend line or projection. It is quite possible that even the experience of the past will not be entirely representative of the future trend. A certain amount of personal judgment, based on familiarity with important policy decisions affecting the future of the college, must ultimately be used to determine the precise ratio or set of ratios to be applied.

I will briefly mention just one other widely used method in enrollment projection. This one is a little more tedious than the Ratio method. It is the so-called Cohort-Survival method. Someone at lunch, I believe it was, became quite perturbed at the mention of the word, "Cohort." It seems that when we talk about Cohort projections, people get frightened, because they don't know what a Cohort is. Maybe this gives us a little status; it gives us a big fancy word which few people understand, and therefore, it ought to be pretty good. For your information, however, if you are not already aware of it, the word "Cohort" comes from a term used by the armies of ancient Rome. It applied to a specific unit of infantry. As we now use the term in enrollment projections, it designates any group of individuals having a similar classification trait. For example, the classification may be by grades in school, or it may be by age. The method is essentially a survival ratio method, listing grade to grade survivals, or age to age survivals. A new Cohort may be considered when going from the elementary grades to the high school freshmen level. Another new Cohort may be used in going from high school graduates to college freshmen - and again in going from those having the college Bachelor's degree to the professional and the graduate schools. The grade to grade survival procedure generally assumes that survival rates will remain constant - that is, that there are no appreciable changes in migration, mortality, or tendency to continue in school. If changes in any of these, or in any combination of these are anticipated, the survival ratio should be adjusted accordingly. The age to age survival procedure usually requires some weighting, in terms of mortality, migration, and combinations of area in which the pool is constituted. It is sometimes difficult to define this "cohort" in the case of a well-known college or university which draws its enrollment from many states. In such a case it may be necessary to use the cohort which contributes a large proportion of the students, assuming that the changes among students drawn from outside the cohort will approximate those taking place within the cohort.

The Cohort Survival Method is in many ways superior to the Ratio Method because it provides more detailed information concerning the projected enrollment. On the other hand, it is more tedious, and in this way it does have a somewhat serious limitation for those of us who are inclined to get the most results the quickest way. Sometimes a combination of these two methods, or variations of them with some methods tailor-made for our own situation, are best. In our Bureau we make two kinds of enrollment projections, one of them basically for the state as a whole. In this case we try to anticipate the enrollment distribution between private and public institutions of higher learning rather than for any one particular institution. At the University of Illinois, of course, we are interested in our own particular institution. We use a grade to grade survival method after the freshman year. We attempt to estimate new freshmen, prospective freshmen, fr.. the number of high school graduates available in the state. We do get freshmen from outside of the state, but the relationship between resident and non-resident freshmen has not changed very much in recent years; hence it has been quite satisfactory to use just the instate data.

Sometimes we do have to change our projections, but, I think for the time being, we will just leave them the way they are. Someone commented - jokingly I hope - just before I left, that maybe we ought to change them because we had estimated 21,300 students for the second semester; actually 21,307 appeared and we do not know where the seven came from. Thank you.

BRIM:

Thank you, Dr. Froehlich. Dr. Dorothy Knoell received her Bachelor's at Douglas College, her Master's at the University of Connecticut, and her Doctorate at the University of Chicago in the area of research and measurement. She has worked in educational research and in institutional research at the University of Connecticut, the University of Chicago, the University of Wisconsin, the University of Pittsburgh, and in connection with the California state colleges. She is now at the Center for the Study of Higher Education at the University of California, and is currently directing a transfer student study that requires her to travel so much that it makes me tired just to hear her talk about her travel schedule. She has spent two days on our campus talking with some of our students who have transferred from various junior colleges, attempting to find out some of the problems they had when they transferred to Northern from a two year institution, and she is doing this all around the country to try to bring to, at least, some interpretable form, the problems that these students have. Most of you realize that your students who come from other universities and colleges, and especially from two-year institutions, have quite a number of problems in following a certain course of instruction and changing from a local institution, where they may be able to live at home, into a larger and sometimes a rougher institution. She is presently involved in about forty or forty-five four-year institutions around the country who are cooperating with her. Dr. Knoell.

KNOELL:

I think I have been betrayed by the introduction which pointed out that I earn my living neither by doing institutional research nor by making enrollment projections. On the other hand, I have been engaged for some time in making studies of some of the factors which I think are important in making enrollment projections. I hope to be able to go back, after completing our present study, to working on one campus, doing the kinds of studies which may have some effect on local policy or decision making. Today I should like to point out some of the pitfalls that we have encountered in California in making studies related to the art of enrollment projections.

We have only recently completed our third major study of higher education in California, a master plan for higher education which should take us to the year 1970. Enrollment projections were a major factor in the decision to undertake the master plan and also a subject of some controversy during the study. I cite our experience not as a model, but rather to illustrate some of the kinds of problems which you may encounter as you move into the new era of coordination in higher education.

One of the first documents given to our committee on selection and retention of students in the master plan study was a set of enrollment projections for the University of California, the California State Colleges, and the junior colleges. The projections indicated that the State Colleges would be growing almost twice as fast as the University, based on gross freshman enrollments over a period of years. This was one of our first pitfalls in preparing the master plan. It was true that the size and percentage increase in the State College freshman class were growing very rapidly, but a different projection could be made on the basis of our analysis of recent freshman enrollments into three components: number of new, first-time freshmen, number of transfers with freshman standing, and number of continuing (or returning) students who were still classified as freshmen since they had not earned enough units to become sophomores. In breaking down the enrollment figures in the original master plan document we found that the percentage increase in new, first-time freshmen was increasing scarcely at all. What was happening was that the number of returning students who had freshman standing was increasing quite rapidly. Instead of moving annually from freshman to sophomore to junior standing, students were registered as freshmen for one and one-half, two, or two and one-half years before earning enough credits to become sophomores. When we reworked the enrollment projection tables to take into account the differential rates of growth in freshman enrollments we found that the growth in the State Colleges should not be disproportionately large in comparison with other institutions.

Enrollment projections were made in the master plan for each type of college and for each individual institution, using "status quo" assumptions. Projections were based on current birth rates, numbers of expected high school graduates, college attendance rates, college enrollment areas, and grade-progression ratios, under the assumption of "status quo" admission standards, educational programs and facilities, and location of colleges. Since each of the three institutional factors will change as the master plan is implemented,the value of the "status quo" projections is in doubt except as a guide to what might have been.

The biggest change in factors affecting enrollment projections will probably be in freshman admission standards which are now undergoing revision not just in California but all over the country. The most dramatic change may take place soon in the state of Washington, where all public four-year colleges are raising their standards for freshman admission quite drastically. At one institution almost 40 per cent of the current freshman class might not be admissable under the proposed change. What is this going to do to this college's enrollment projections? What will the institution be able to assume about the grade-progression ratio for the freshman class admitted under the new standards? Will the quality of the entering group improve dramatically? Will a larger percentage of students return as sophomores under the new standards or will the faculty continue to fail as many students as under the old standards?

In California we have still a different approach to changing admission standards and thus manipulating enrollments. Under the master plan we are required to reduce eligibility to the University and to the State Colleges by raising freshman standards. Currently about 50 per cent of the high school graduates are eligible for State College Admission and about 15 per cent for University admission. The State Colleges have been requested to reduce eligibility to one-third and the University to 12½ per cent of the high school graduates, with the ultimate objective of diverting large numbers of freshmen to the junior colleges for their lower division work. Since both systems now attract only a fraction of the students who are eligible to attend, it is theoretically possible to comply with the master plan percentage requirements without reducing enrollments by one actual student. On the other hand gross changes in admission standards could change the composition of the freshman class in a drastic and perhaps undesirable fashion. One proposal would have reduced eligibility as required but at the same time would have wiped out a large proportion of the freshmen men because of differences in performance in high school of men and women on which the proposed standards were based. If we were to admit only women who would have been eligible under the proposal, we might have had almost a complete turn-over in the student body by the junior year because of the high drop-out rate of women admitted as freshmen to the State Colleges. New proposals are now being weighed which would have varying effect on enrollment projections for the future because of their differential effects on specialized programs offered by the colleges.

The factor of availability of higher education is an important one in California in projecting enrollments, where virtually all students will be near junior colleges in a few years. What happens to four-year colleges' projections when new junior colleges are created in their service areas? If we divert students to junior colleges either by raising standards or creating new institutions, whom (and how many) can we count upon to transfer to four-year colleges after one semester, one year, two years, five years, or not at all? Cost is still another factor to be manipulated in projecting enrollments -- tuition, fees, living expenses, etc. As we raise the cost of education to the student in our four-year colleges while maintaining free education in the junior college, what will happen to patterns of initial attendance and transfer? In a few states, arbitrary limitations are being placed on the enrollment of new students without raising standards or costs -- students who qualify will be admitted on a "first come, first served" basis. What happens to students thus denied freshman admission to four-year colleges? Will they attend junior college with the expectation of transferring a year or two later?

Enrollment projections need not be used solely for the purpose of justifying more money for more buildings and for more staff or to add new campuses. We may also use the technique and the data thus produced to evaluate pending decisions about new programs, higher standards, increased student fees, new facilities, etc. We need to know far more than we do now about students' choices of college and program, patterns of persistence, and the weight of such factors as convenience, cost, availability of specialized programs, and living arrangements in choice of college by the student and/or his parents. What happens when a new, low cost, unselective two-year college is created in an area not previously served by public higher education? How many currently enrolled or potential students will be enticed away from existing colleges? How many students will attend college who might not have done so if the new institution had not been created? How many older high school graduates will attend college for the first time, because of availability? What will happen to enrollments when the new college moves from unattractive, temporary quarters to a new campus (perhaps some distance from town)? As older students complete courses and/or programs, is there a reservoir of adult seekers of higher education who will replace the initial enrollees in this category?

In California we have to worry about the building of new freeways in relation to patterns of college attendance. As new routes are opened, we find that some students change schools in order to reduce commuting time. When we add the variable of time of day when particular courses are offered to that of patterns of freeway traffic, we find students who may transfer between schools several times for the sake of convenience. Until now we have had primarily non-residential colleges in California except for the private institutions. Modest residence hall programs have recently been started, with the objective of making higher education more readily available to students not living within commuting distance of our four-year colleges. Many parents do not want to send their freshman daughters away to college if it means living in the community in unsupervised housing. The dormitory program was undertaken as an alternative to building four-year colleges in every town, as a means of equalizing educational opportunity. However, we are finding in some of our informal studies that students from the southern part of the state, where colleges are plentiful, are coming up to the San Francisco area to go to college away from home, while the students from the northern part of the state are living in residence halls down south. Thus, instead of attracting new students who were not within commuting distance of four-year colleges, we are just shifting our population from one end of the state to the other. Too, some of the colleges have experienced a far greater demand for campus housing by men than by women, contrary to expectations.

The last area I would like to mention is the very critical area of decision-making about the creation of new programs or curricula. If a new professional engineering program is added to the curricula of an existing college, how many and what kind of student will be attracted to the college who formerly might have gone elsewhere? How many new non-engineering students will be attracted as a result of changed reputation, improved science facilities, increased number of males?

I am hopeful that in this age of computers we can perhaps make alternative sets of enrollment projections, testing out some of these hypotheses about different factors, evaluating possible decisions about changes in policy, etc.

BRIM:

I now see why some of our previous predictions or projections of enrollment have not been complete. We have not considered all the variables we would have; or rather our next speaker did not consider all the variables he should have two years ago. Dr. De Zonia received his Bachelor's and Master's degrees from Memphis State College at Tennessee and then he turned North and has been moving northward ever since. He came to Champaign and received his Doctor's from the University of Illinois with a teaching area in Educational Psychology and then he moved here to Northern, where he was assistant director of institutional research. In looking back over some of his enrollment predictions now, I am sure we would find that he underestimated a little bit in neglecting to look at the road situation, I suppose. Three years ago he left Northern to take a position on the Coordinating Committee of Higher Education, State of Wisconsin, of which he is now co-chairman.

DE ZONIA:

I am just co-chairman of the staff, not of the board. A committee of the laymen still runs us. Compared to California, Wisconsin is like a very quiet, secluded, cold-storage box. I am just concerned whether we will ever get any roads, much less all these Dorothy is talking about. I served an apprenticeship here under Charlie Howell for a year and I will show my ignorance now. He was a good teacher, but I was a poor pupil. I was reminded when I was asked to speak before you--now this is a true story, not just one of those that you hear at a convention, this really happened. The Dean of the Graduate School of Memphis called me in and said, "I want to show you a letter I just received from a doctoral candidate." And this letter started out very rationally and in the scientific method of doing things. "Dear Dean, Several months ago I sent out a questionnaire asking for x number of statistical data and so on." Paragraph two, "As of this date, I have not received this information from you and I need this in quite a hurry." Paragraph 3: "In fact, things are getting pretty tough around here. My committee is breathing down my neck. So please hurry the information to me." The next paragraph: "In fact, the dean was in yesterday to tell me that I had to have this thing in ten days. So I must have this information from you, if you please." He signed it, "Very truly yours," and then at the bottom in big, red letters he had written "HELP, HELP."

And this is pretty much how I feel when I approach this problem. Everybody needs as much help as he can get in discussing enrollment projections. Now, I had this apprenticeship under Charlie and at the moment I feel as though I am not quite a journeyman yet in terms of predicting. I would like to say that at Wisconsin we have a blueprint that will project everybody's enrollments accurately and with precision. There will be no questions from legislators or anybody else. But, we do not. And my presentation today will probably do more to confuse you and raise issues and ask questions than to give you tried and true answers.

I think that it is fair to say that there is a wide-spread interest in Boards of Education and in coordinating committees. We can look at Illinois. Here Dr. Browne has been pressed into service to lead the educational institutions. Michigan has Dr. Chambers. California now has a coordinating council. These coordinating boards are interested in enrollment studies and in other kinds of institutional research. The lay boards, and most of them are lay boards, although the California board has some professionals on it, depend upon the staff for assistance in developing long-range plans, so some studies as those of physical plant utilization or student characteristics, the geographic origin of students, and enrollment studies and projections are of prime importance to the state boards.

In Wisconsin, we have the practice of making several projections. Joe Lins can attest to this. We have two kinds: Those for building purposes and those for budgetary purposes. We have felt it best to be a little bit short in projecting for building purposes, but not for the budget. The legislature is a little bit leery about putting up buildings for students who may not arrive. They are also a little bit leery about deficit appropriations, and they are even more leery about giving you more money than you actually need. So, emphasis is placed on making most accurate projections for budgetary purposes. In Wisconsin the Coordinating Committee has asked the institutions to do the projections for budget purposes. We have done projections for the building needs of the state. As a consequence, there has been a heck of a lot of confusion in Wisconsin. We have figures going out from one source and figures from another source, and the legislators quote one set of statistics, the governor remembers the wrong ones at the wrong time, and makes a public pronouncement, and there we are 200,000 students off somewhere. But, we are now trying to perfect a single projection which can be used for public consumption, and then for all these manifold purposes and devious needs we are just going to adjust it for specific purposes.

Basically, our experience at the state level in Wisconsin has not been what I would call too happy. We have used the Ronald Thompson College Age School figures and we have used a five year moving type thing on the basis of increase. And then, arbitrarily, because of the building program, we have slowed this five year moving average by one-third. This is sort of like Blackstone, the magician. Why one-third? Well, it was just there, we got hold of it, and that was it. But by and large, using this kind of projection has put us on the conservative side. In fact, last fall we were quite shocked to find out that we had missed the nine state colleges in the state by 1600. This was somewhat of a gross misprediction, or projection. Herb Silvey told me, when I told him I was going to say this, that this will be a surprise to this meeting. It will be the first true confession that will appear. I hope this is recorded somewhere in the minutes. We missed it, and missed it badly. The legislature, of course, is somewhat happy when you are low in your estimates. But I think last fall, for some reason, we were grabbing with our brakes on.

I am not sure whether this thing was going on in other states or not. I get different pictures. We felt like this was sort of a nation-wide pattern or at least a regional one in which everybody got over-whelmed last fall unexpectedly. If any of you have anything to share with me on that, I will be happy to talk to you afterwards because I am afraid it might have been something local rather than national. Over the last ten years, for example, we have missed nine out of ten times at the University of Wisconsin, Madison campus, on the low side. That is not bad. The low figures have not been too bad except in two cases, and on those two cases we missed by 1100 and 1200 students. This becomes somewhat of a significant error. For the state colleges, we missed eight out of ten times on the low side. And three of the low eight were significant--anywhere from 1300 to 1800 students. So you see, we are somewhat concerned about projections. Now this is primarily why we are motivating ourselves to examine all the known methods and then, with the help of the representatives of the university, namely Joe Lins and Bob Winter from the state colleges, we are attempting to improve upon our performance. I think what I really want to say to you is something about the factors which the Coordinating Committee for Higher Education of Wisconsin is interested in and why enrollment projections are important to the Coordinating Committee.

In the first place, the Coordinating Committee has legislative authorization in certain areas. It has a statutory responsibility for budgets, buildings, and the educational programs for all the public institutions in the state. This is a heavy responsibility. As such, it is greatly concerned with policy questions which are directly related to enrollment projections such as these: What is the optimum size of a campus? In considering your local projections, it does not make much sense to overextend or for anyone of the state board, let us say, to say that X university is going to double in size. Let us say X university is already 30,000. Well, should X university be 60,000? This is a policy question which everybody gets concerned about. It is easy enough to rummage through the statistics and say we are going to double. But where will the doubling take place? Where should it take place? Can new institutions be created? Another point: Should the calendar be modified so as to bring about a longer school year? This is one of the current items of interest to meet these growing enrollments. What about the utilization of our present plant? A lot of people on the other panel brought this out. But can we absorb more students by checking our utilization, doing more with certain days or lost weekends, etc? This is directly related to the enrollment situation.

Then again, what are the implications for the curriculum for all this growth? What colleges can one expect to expand in terms of offerings? What colleges should expand? What colleges should be given more offerings? And what, in turn, relates to whether or not you should project more students for that college? What is the impact of putting all these dormitories down here on this campus? Is it true that you will get the students where you put the dormitories?

Finally, should enrollments be restricted? This is a big question at Wisconsin right now because there is no restrictive admissions policy. There is screening for people in the lower quarter or the lower third, but anybody who wants to can come, even if he flunks the screening test. We try to counsel them out. This is terminology that people in Wisconsin use. And everybody can come if he pushes hard enough. Well, should they be restricted? If so, what kind of opportunities should coordinating boards or state boards of education provide for the people who are squeezed out by the restricted admission?

I will rush through some of these other concerns. I think Joe Lins has a very fine booklet published by the registrar's association--Joe asks, appropriately "What Is a student?" This is something all of us should get our hands on. "What Is a student?" Is he a full time equivalent? Are you counting only the students who are enrolled for daytime courses? Is it a head count? Are you counting all credit students--as the U.S. Office does? What about your evening students? Your non-credit students? Another question. What are fruitful ways--and I do not know this one myself-- what are fruitful ways of projecting graduate and professional student enrollments? Now the Wisconsin state colleges have been authorized to do Master's degree work in the field of teacher preparation. We do not know how to project (over a 15-20 year period, which is required of us by the legislature) these graduate student enrollments when they have only 47 right now in all nine colleges. What base do you use? Multiply 47 by what?

Well, this is something fundamental. As colleges grow, and their offerings are expanded, the programs are expanded by the boards, and how are you going to project from the existing enrollments at the higher levels. Another significant question which everybody can once again get hold of: What share of the student population will be cared for by private colleges? We have a feeling at Wisconsin that our conservative projections are even more so because we have not built into the projections the deceleration of the population that is being taken by the private institutions. In 1951, 64% of the college population was enrolled in public institutions. In 1961, it was 70%. We have not built that in. This is why the re-examination now takes on more meaning. And it should for all states, and probably for all institutions which have private institutions in the neighborhood.

The Coordinating Committee in Wisconsin has good working relationships with private colleges, and they helped us in determining what they think they can do in the next 10 years. Their present thinking is that they will expand 60%. If everybody else is going to double, or, let us say, state wide enrollments are going to double, this necessarily means that the public colleges will have to more than double to take up the slack. That situation will be created by the private institutions not doubling. This is a factor that must be considered.

We need more information with respect to the out-migration and in-migration of students in the state. Generally, most states have a good tab on the out-of-state students coming into their institutions. In Wisconsin we know that 32% of our high school graduates go to a Wisconsin college. We have not the foggiest idea how many Wisconsin students go out of the state except through the data the registrar's association provided back in 1958-59. We need to get more data with respect to those people who are leaving us and going to other colleges. We need to get better information from state departments of education with respect to high school graduates. We have had a bad situation in Wisconsin. We have not been able to get any enrollment statistics or graduation statistics from the private or parochial high schools. So, in setting up a pool of those people, all you could draw upon is the public high school graduates plus an estimate of the private or parochial graduates which is provided by people in the field, and have some knowledge of what is going on in that area.

Then we need to know a little bit more about the geographic origin of the students. What counties do they come from? We generally have a pretty good picture of that, but I think some states may not. I have some reports that I will leave over in the other room tomorrow about the Wisconsin college student. I have about 7 or 8 of them, but if you will leave one on the table, whoever is first can have the rest. They show basically some data that we gathered on our students to help us in this whole question. But, finally, what is the impact of tighter admissions policies? We need to explore this in all of our institutions, too. For some people, even board members I suspect, are much like the DDT resistant fly; they have already become insensitive to these ballooning enrollment estimates. I think, however, we are encouraged, none the less, by our responsibilities to the boards and to the administrations in our institutions with respect to educational planning, to work as vigorously as we know how to improve our enrollment projections. So we, at the state level in Wisconsin, are laboring to do just that; and I am sure that we are joined by most, if not by all of you, in this statistical battle. Some people have called it a sadistical battle, but that is up for grabs. Frankly, when Chuck said, "Predictions of enrollments", and I wrote this down just as he said it, I say we don't predict; a toss of a coin has proved to be a most accurate device for projecting enrollments for some states, I'm sure. Now, what I would like to know is "Who has the coin?" Thank you.

BRIM:

We had asked them to give us the answers, but it seems as though all Bob is doing is asking questions. That reminds me of a statement made about seven years ago before we had directors of research as we have now. The statement is, "We know more about last year's hogs than we do about last year's college students," and I think, unfortunately, this is still true although we are beginning to narrow the gap a little. I can write Washington, and I am sure, find out exactly where last year's hogs went, what they are doing now, and probably what most of them will be doing now, and probably what most of them will be doing next year. We can not do this yet with the college student or the potential college student.

Our next speaker has a slightly different interest in the projection contradiction of college enrollment because he is asked to find jobs for many of them. Dr. Martin Bartels received his Bachelor's Degree at Capitol University in Columbus, Ohio; his Master's and Doctor's at Ohio State University; and then he spent the next 21 years with the public schools in Ohio. Varied experience: teacher, principal, school superintendent and with curriculum development. He spent five years at what he calls a sort of institutional research in the public schools where he was a research assistant for the Cincinnati public schools. Apparently some of this experience proved rather interesting to him because he is always coming down and taking our best calculator away from us to attempt to project enrollment figures not only for Northern but for certain high school areas near by. He seems to have a method. Actually, he has several, but he has a method or two that he has confidence in when he is talking to me, possibly because I am not too critical. Perhaps he will be just as confident when he gives you the answer, if he does.

BARTELS:

I have just been trying to figure out what a poor old placement director can add to a meeting at this stage of the afternoon. I am reminded of how Demosthenes learned how to talk. You know, he was having a little trouble with whispering, and the speech correction teacher got a hold of him and said, "See here, young man, get this name, get this story. Memorize it. Go up the hill with ten pebbles on your tongue. When you can do it correctly with ten then get rid of one, etc. And you know, he became one of the world's greatest orators." Now in modern times, a substitution has been made by speech correction people, I am told. They substitute marbles for pebbles. When they have lost all their marbles, they become placement directors. I do not know what you would say about one of these placement directors who would try to address a meeting after all the learned information that you have received here this afternoon.

I would like to add a few ideas, however, as to what has been said about projecting school and college enrollments. It was mentioned that the U.S. is in a terrific growth curve, and I would like to accentuate that by reviewing briefly a study from the N.E.A. Research Division, which states that in the decade of the '60's the general population of America is going to increase by about 19%. During this same decade the college age population will be increasing by 57%. We have something to do. We have been talking today about these fascinating devices to increase our capacity to approach 100% room utilization etc. One wonders just how far we can move in these directions when we are faced with the challenging things that are going to happen to us in the field of education. I think it is just thrilling to think that today one fourth of our nation is going to school.

We had on our campus a very wonderful speaker, Dr. Adams, the former president of the American Council on Education. He emphasized the importance of developing an institutional image of the future. He quoted someone as saying that the measure of greatness for, I believe, Stanford would be in terms of two pillars. One - Size, and the other - Quality. In these days many of us have no choice in forming an institutional image, of choosing between size and quality. We have to think of quality along with the size that we are forced to absorb, which is sometimes due to circumstances beyond our control. When we get to relating this thing to the question of predicting population, I think we have encountered many of the pitfalls mentioned in discussions by the last several people who have pointed out the problems we run into this in trying to accurately predict. I ran into this several years ago when some reknowned demographers - Thompson and Whelpton - at Miami University in Ohio, were predicting population trends in this country subsequent to World War II. They met with a statistical society in 1945, and explained how the birth curve would move up to 1947 and then slope down, and by 1975 our population would become static with births approximately equalling deaths. Well, they kept on meeting in that society and about two or three years later they had all the explanations in the world as to why the predictions were not accurate. I do believe that the "cohort survival" or the "carry-over ratio" technique is perhaps the most acceptable for predicting enrollment trends. I believe it does have the advantage over the type of projection that these demographers were using, in that it deals primarily with children who are now in our population. I think we can be fairly sure about those projections, about the 18 or 21-year olds in the next decade, because they are born and future involvement as far as change in birth rates is not going to drastically affect enrollment trends of the immediate future very drastically.

This question of accuracy of our predictions came home to me years ago in Cincinnati. Our research department had said that the next fall we would need 75 additional teachers. The waiting public kept track of this prediction and remembered it, and that fall we did not need 75 people. In fact we needed very few additional teachers. The research department, for a little while, was somewhat the laughing stock and the whipping boy, because it had made such a grave error in prediction. About a year later when we had the plus and minus figures between Cincinnati and Hamilton counties, it was discovered that the predictions were statistically sound, but what had happened was that there was a sudden migration - a lot of people had for many years been looking for an opportunity to build that home out in Hamilton County, outside the city. And this migration occurred as post war building became available. Hamilton County increased by just about enough pupils to have absorbed the extra 75 teachers. This type of thing happens over and over again. I think we do have to watch it.

It does seem as though this cohort-survival technique has the greatest amount of validity of the various approaches. Dr. Rogers, former Assistant Superintendent in the Chicago system, did routine projections year after year in order to estimate staff needs, and these were regarded as a very reliable index to immediate staff needs. The University of Illinois has experimented with tremendous accuracy, predicting the number of majors by departments and estimating faculty needs as a result of this kind of projections.

I would like to just make a few comments in closing. One: adjust your predictive ratios, or whatever you call them, according to experience. We have found in predicting public school population as a factor in supply and demand, which does relate to this question of how many teachers we need and so forth, that what works one year may vary a bit the next. We examine the data and sometimes we can explain our particular predictive factors only in terms of a little bit of magic. Sometimes we do fairly well.

I think another factor to be considered is the relative saturation of the field. A few years ago I had the pleasure of doing a school enrollment projection for the city of Rockford. We found that our projections were fairly solid for a few years. Then, they began to become a little too elaborate, exceeding actual figures. We got to inquiring about the reason for it, and here is a city that is hemmed in. You do have to consider saturation points which may allow an area to grow very comfortably for a while and then rather suddenly run against a stop as building lots became unavailable.

I think one of the things we need to do in this kind of prediction is to realize that we are living dangerously. All we have to do is review the history of the Literary Digest poll of a few years back and we can be quite humble about most of the predictions we make. One general comment Bob De Zonia has already made. We can be a little bit conservative because we probably will be stoned less for being conservative than for being too elaborate.

I am a little inclined to favor a target projection, assuming that we are going to have a lot of leeway on both sides rather than the safety of a field, with a high and a low. Although I am sure, in many cases, one or the other will be more valuable. We have attempted to predict the growth of our institution. Several years ago when we presented to a planning committee the idea that our institution would achieve a size of 10,000 by 1965, Dr. Howell, I guess we were laughed at, weren't we? We came up with a figure from the outside that somebody had tried to assess the higher education role by states, and this seemed to indicate that the great problem would be not whether 10,000 would be used, but how many 10,000 capacities it would take to adequately take care of the load.

We have had quite a bit of fun recently with a problem of trying to project prospective community college memberships. I might say this is a will-o-the-wisp. The problem of predicting the number of high school seniors, which is basic to this, is not so great. But the problem then of translating high school graduations in terms of community college enrollment is a tough one. We have obtained a formula from California, but our committee does not want to accept it. They say, "How do we know that our experience is like California's?" We have checked our predictions against those of recently formed community colleges and found that, in general, the size of a community college is not likely to be too far away from about 1% of the general population--after so long a time. This is another rule of thumb. I think that we need frequent bench marks of this kind to re-enforce our techniques.

BRIM:

Do you have any questions to direct to the panel?

FULLER:

Sir, can you tell us some of the experiences of projecting based on the student contact hours or the student class hours?

BLAKESLEY:

Have you developed techniques for projecting course enrollments? Since each course has its own educational environment established by its class size, type of presentation (lecture, demonstration, recitation, etc.), type of facility required (laboratory, classroom, seminar room, etc.), staff requirements, and related budgetary committments, it seems essential to project the number of students expected in year "X" for each course offered within an institution.

FROEHLICH:

I would like to say that we do list this, sort of indirectly, by getting the relationship between the enrollment figures and the equivalent of course registrations in terms of past history and then translating that to future staff needs.

QUESTION:

What is your enrollment cell? Do you mean student qualification in school or does it go further into the needs and sex?

FROEHLICH:

For example, the number of first semester male freshmen who are enrolled in the College of Agriculture - this would be a unit cell.

HOWELL:

May I speak to that, Mr. Chairman? We would carry that a little bit further in that we keep a constant index of growth, of the rate of growth in departments to the rate of growth of the university as a whole. We have figures now for over a twelve-year period. A department may be broken down roughly, maybe not absolutely, but roughly. Therefore, if the English Department, for instance, said "What is your prediction as to the number of Freshmen sections in English 103, assuming the size is to remain the same, what will be your projection for the next academic year of 63-64?" We will apply the ratio of the projection for the entire university to the ratio in the English Department corrected for its change relative to the entire university.

THIRD SESSION

Presiding: **Charles Brim**, Research Specialist, Bureau of University Research, Northern Illinois University.

PROBLEMS CONCERNED WITH SALARY STUDIES
Speaker: **H.M. Silvey**, Director, Bureau of Research and Examination Services, State College of Iowa.
Discussion: **Charles E. Howell**, Director, Bureau of University Research, Northern Illinois University.

SILVEY:

I want to take this opportunity to extend words of commendation and praise to Charlie Howell, Milt Carlson, and Chuck Brim and to the Administration of Northern Illinois University for their vision and leadership in arranging this conference. Meetings such as this, and my privilege to attend, I am convinced, will pay higher dividends to my institution by way of inspiration and new ideas which I will take back with me, than an entire month spent at my desk, more or less isolated, so to speak, with my head in a sack.

In the years that have gone by we have suffered immeasurably in the progress we might have made as a result of a lack of communication and the exchange of ideas. For too long each one has traveled down his own narrow path without telling what he was doing or asking what others were doing.

Now I want it clearly understood and to become a matter of record right from the very beginning that I do not come before you as an expert or someone who knows all the answers in this area of salary schedules. My familiarity and knowledge of the subject stems solely from my working with this cooperative enterprise that has been going on since 1957 in colleges in the midwest. I hasten to say that that experience has not opened any magic doors of total understanding for me. There were problems at the beginning, and there are problems still. If I can share with you some of the insights that I believe we have uncovered which will clarify some of the information that goes out with regard to salary, I am glad to do that. But I do not want you to have the impression that you can ask me questions and I would know all the answers.

I am glad of this opportunity I have to share with you my experience with the Cooperative Research Program which produces, among other studies, an annual salary study of college faculty. It is my intention to approach my assignment on the program from the standpoint of stimulating some thought and informal discussion, and that my discussion will not be considered to be a lecture on the subject. My remarks will try to point up some problems which have been present in the past and which will probably be present in the future when salary studies are made. Some difficulties presented themselves a half century ago, and they are just as persistent and annoying today.

Before I begin this, it might be of some interest to us if we would take just a few moments to think together as to what are the purposes primarily for which we make salary studies or salary surveys. Why are they made? Why do we need them? Are they of any value? For what purposes are they useful? To what use can we put the findings? It seems to me that our society is philosophically and operationally structured and arranged so that it functions in a competitive framework. The course that we pursue (what we do) is influenced tremendously by what others do. Our system of free enterprise suggests comparison, and there are forces that are continually impinging upon us that sort of nudge us toward some state of compatibility. If we are unlike something or someone that is about us, we are uncomfortable. The kind of hat that the little lady will wear at Easter time will not be selected so much on the basis of what she likes as on what other women will be wearing.

The faculty salaries at the State College of Iowa that we get (I was going to say that we enjoy) are due not so much on the resources of the state of Iowa or its ability to pay, as on what are the salaries that are paid at Northern Illinois University, or at Eastern Michigan University, or at some other comparable institution. There is that tendency to be compatible. It ought not to be that way; but, by and large, that is a most influential factor. There again, we want to be alike and/or be compatible with what the total group is doing. If we can determine what others are doing, we can arrange our schedules and our efforts so that we will not be too far astray, so there will not be so much complaining about salary reports and salary studies. Mind you, I am not talking against the reports - they have been instrumental in getting us the salaries we get today.

One of the first things that these institutions which are involved will look to see is how do we compare with all the rest of the institutions. If they are at the top then, "Man, we have arrived." Not whether we ought to be or whether we have the resources to pay, but are we at the head of the group? I want us to get the idea that legislators are not the only ones who are influenced by this. Teachers and administrators are guilty of the same thing. I do not know if it is human nature or what it is. We feel some satisfaction if we can arrive at a bargain. Grocery stores can pan off more stuff on women just because of "specials." "We don't exactly need this, but it is a good buy."

If an instructor announces to the administration that he has an offer from some other institution, a little more money; he is tempted to go. If he is worth his salt at all, and the administration does not want him to go, they will offer him $300, $500 or $600 more to stay. Alright, if he is worth the $600 in terms of this threat, why did he have to do it in order to get it? I do not know if it is best to operate on this plan to just do "what the traffic will bear." We have done it too much. These education salaries studies are not anything new. They have been made systematically and fairly successfully for quite a long time.

Beardsley Ruml in his little booklet, "Teaching Salaries Then and Now," which he put out for the Fund for the Advancement of Education, released in 1955, pointed out that "good statistical material was available regarding educational salaries in 1904."[1]

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[1] Beardsley Ruml, Teaching Salaries Then and Now, Bulletin No. 1, The Fund for the Advancement of Education, New York, 1955.

That is why he used 1904 and 1954, the 50 years. I just mention this in passing to remind ourselves that this salary comparison and study has been going on for a long time. For purposes of analysis, a salary study can be divided into two distinct stages: No. 1 is gathering the basic data; No. 2 is reporting the data. This gathering of the data is, of course, the father of the report.

Trying to get specifically to the area that was assigned, "Problems Concerned in Making a Salary Study," I think the first one that stares us in the face is to define the word "salary." I know it is foolish to raise such a question, but what do we mean by salary? I will go to the next one which hinges to that--comparability. Data must be reported alike. One of the first problems is that of achieving comparability, because there are not many salary studies on the framework that we are talking about but what involve more than one institution. That is why we make them in the first place. It is comparability we need--to see how we stand with some other institution.

The next question is, "Are there any ways (any schemes) that we can engage in that will achieve this matter of comparability?" I think one of the first things is that of definition. Spell out specifically (and I think there is one place we had better not be afraid of insulting someone's intelligence) just as clearly, just as concisely, just as completely as we can. We will still find variations and substitutions and that type of thing. For these studies and these purposes, everybody had better answer the same way, because the moment we leave the gate open, or even a crack in the door so that judgment and opinion can come in, we are in trouble. We try to provide detailed directions with data sheets. Nothing is left to surmise or judgment, opinion, or interpretation. Fact of the matter is, we spent a good part of two days as a group of committees getting these definitions and directions specific and then over the years we have tried to refine them.

There is another problem that we are faced with. In order that the salary report will have meaning and reliability, the same time period must be used in reporting all salaries. The base period or contract time must be used the same for all participants. Is the academic year a period of 9 months, 9½ months, or 10 months? In most institutions that is what they call the academic year; and if there is any summer, it comes separately. Administrative people are usually on a 12-month basis.

Now then, we are still facing up to this first problem, "What is salary?" What will we do with fringe benefits? That is getting to be a sizeable amount of the income. On April 15, you know, we have to turn in a report to the federal government; and there are certain bypasses that can be legally arranged so that it does not pinch us quite so much. If they will report salary and fringe benefits and this, that, and the other in a particular way, you know, it is not deducted in a certain way. What do fringe benefits include? Do they include annuities and retirement systems and insurance, both life insurance and liability insurance? In our institution we have a hospitalization program, but we pay for it; it does not make much difference. So now, what do we mean by salary? What are we going to nail down here for purposes of this report for people to indicate as salary? Is it going to be the total yearly, calendar year, income? That is kind of hard to get at because, you see, we get into this situation where one state makes no contribution to health insurance and these other various kinds of insurance and another state does. You will probably question this. How do you do this in order to get at it? The way we do this (and we do not have any argument that this is the correct answer) is to report for the academic year the salary as recorded and reported for income tax purposes from the business offices. So that would leave out, in most instances, fringe benefits.

The second part to this salary-study business is making the report. That report needs to be analyzed and statistically treated and made in a way so that it will not provide misleading information. I mean the figures can be statistically accurate and yet give some misleading impressions. Let me show you. One of the first things they will look at is this first table which shows the spot where we ranked on the median and mean salary paid for the academic year in 1960-1961. Well, I look here and I guess I can look with a bit of pride. I see Cedar Falls, Iowa, ranked seventh in the average salary paid to total faculty for 1960-61. We are not far from the top in 45 institutions.

Turn to page 18, and here is the misleading business; here the report should be analyzed. Page 18 points out the salaries and positions of these institutions in terms of professorial rank breakdown. I find that Cedar Falls (that is my own institution), for department heads, ranks 6th out of a list of 45--you see, it was 7th in the over-all. We were really up there. Then you get over to the professors, and we rank 12th. We ranked 15th on associate professors; 15th on assistant professors; 19th on instructors; and then there are three or four--they do not have any rank at all. They rank 9th on that. Now then, in a report such as this, this is a problem. Should it be presented as we present it with all hands off as a compendium of information? There are no conclusions drawn, there are no recommendations, there are no suggestions, there are no observations. That poses a problem. What is the best way of reporting?

The closest thing we have gotten to in pointing out any kind of recommendation or observation is (we have been carrying this on for a period of years) that I add a little part in the back that I call "Trends" to show the differences that have taken place since 1957-58 until 1960-61 to '62. Thank you very much.

BRIM:

I hardly know what to say in introducing the next speaker since he is my boss. I am afraid to tell the truth, and some of you know him well enough, I can not lie too much. Charlie Howell did his undergraduate work, his masters, and his doctorate at the University of Iowa. Dr. Howell has been here at Northern Illinois

University for approximately 24 years, most of that time as a professor of Social Studies, and then he went into the "answering questions" type of business. So for the past five years, he has been the Director of the Bureau of University Research and as such he can make people work; I can vouch for that.

HOWELL:

I very seldom tell a story, but I think this one is quite applicable to Herb. As I recall it, the first group of meetings to consider this cooperative salary study was held late in the fall of 1955, or it might have been shortly after Christmas in the very early spring of 1956. As I recall, a group of six or seven schools met out at what was then Iowa State Teachers College (now the State College of Iowa) with only a very vague idea of what it was we were going to try to do. Herb said we struggled on this outline for two days. I think we were out there for three days that first time.

At the end of the first day it seemed that there was just no possibility of agreement and there were only six or seven schools involved. It seemed that every time anybody brought up a definition, somebody said, "That will not work because in our institution we do it differently than that." The second day we began to arrive at a little bit more agreement. And on the morning of the third day, I think Herb's attitude was something like this. A story is told of a family that lived down in a dry wash and along came a flash flood. It came very, very suddenly. So suddenly that the family did not have any chance to get out. So they climbed up on top of the roof. Papa and mama were sitting up astride the ridge pole. Johnnie and Suzie were down on the eaves dangling their feet in the water. Suzie looked out and said, "It looks like a hat, but it's going down that way and then it's coming up this way." And Johnnie said, "Yes, it is a hat. That's grandpappie. He said that he was going to mow the lawn today come hell or high water!"

I think that Herb decided that on the morning of that day we were going to arrive at some kind of an operational agreement by which we could at least make a start. I do not recall exactly the number of schools in the first study, some 23 or something of that sort. It has grown rather steadily since that time. Annually, the group or representatives of the group, have met and we find definitions and added items of comparability. It is up to Herb to put this report together so that the studies to which he refers will give mean salaries for the total institution, mean salaries with department heads and administrators excluded, mean and medium salaries by rank, by instructional assignment, by amount of training, by years of experience, and by almost any combination that you may wish on this.

We have come to believe that within the framework of the definitions, with which you may or may not agree, the data are comparable. There is but very little opportunity for judgment. As I recall it, there is only one place where judgment is required and that is usually based on some objective evidence. The group is divided into those people who are purely instructional, purely administrative, part of each with a little more administration than instruction or a little more instruction than administration. It is at this point only, where you decide that this person is putting more than half his time on administrative duties or more than half of his time on instructional duties, that judgment comes into the picture. Now this matter of salary studies, apparently is of a great deal of importance to a great many people.

We keep the questionnaire file in our office (which I think the president, the academic vice-president, and executive vice-president use as their circular file--because a questionnaire comes to their desk and it lands on ours.) I looked through to see just what we have done in terms of questionnaires about salaries. In the last year we have answered 26 different questionnaires about salaries--all the way from this cooperative one to the A.A.U.P. to the North Central Association, to NCATE, to the United States Office of Education, and to a whole variety of other agencies. You transfer the salary figures from one report to another because one of them wants you to omit this kind of a person or to be sure to include this kind of a person. This one may not want you to include the staff of your university school. This one may not want you to include any administrators. This one may want your total calendar year salary. This one may want your salary on a contract basis reduced to a nine month comparable figure. This one may want all of the contract period recorded.

In our own institution our basic contract period for instructional staff is nine months, but we have some people on nine and a half, we have some people on ten, some on ten and a half, some on eleven, some on eleven and a half, and then quite a number on twelve. We have a whole gamut of possible reports.

Some want fringe benefits included. For those of you who are familiar with the A.A.U.P. study, this is one objection that I have to it. In some instances, as reported in a little footnote down at the bottom, a fringe benefit is included without stating what the amount of the fringe benefit is. Some will include a fringe benefit as a dormitory director here may have room and board. This is included in some places. It is excluded in other places.

This question of salary study becomes of very great importance if you are going to get comparability. Since the only purpose for it is to make comparisons, you will have to be fairly sure that you do have comparability. Now, Herb did not tell you this, but I am going to say it. If it is not right, Herb will disagree with me. His institution, together with his sister institutions in the state of Iowa, have, as a result of continuing salary studies both among this group of institutions as far as the State College of Iowa is concerned, among the big ten institutions as far as the big ten is concerned, rather adopted the policy that they are going to try and stay in third place. Is this right, Herb? This is a conscious policy that they have said, "We do not think that we can justify with our Board going to the top, but we certainly think that we can keep them from shoving us down any further than third place." I think we should excuse Dr. McKelvey while I say what we use it for, but very obviously, we use the salary study as the basis of indicating where we stand in the academic marketplace. The salary study is used not only for comparisons with the other academic competitors, but with the competitors for academicians outside of the university world. We must do this sort of thing. In making salary studies that are going to be completely meaningful, we are going to have to go to what other professional groups are earning. We must know whether or not we may use the information in a particular situation. We are going to have to know how we stand with the doctor, the lawyer, the dentist, the bricklayer, the truck driver, in order to make some kind of an impact and get a use out of the data. There certainly is no value, as I see it, in making a salary study simply to have a record of what salaries actually are because they are completely wrong.

One salary study that I think probably has had more effect than any other salary study that has been made, was the one made by the President's Commission on Higher Education. I think the report was issued in 1957. As a result of this study they came to the conclusion, and so recommended in their report, that academic salaries should be doubled on the average from 1956 to 1966. They arrived at this conclusion only on the basis of some knowledge of what academic salaries had been, where they were going in relationship to other salaries, and made a conscious attempt not only to catch up some of the ground that had been lost in the 20 years prior to 1956, but to gain a position of some relative superiority by 1966. I think that single report, made by a Presidential Commission and hence carrying prestige by virtue of the fact that it was the Presidential Commission, has probably had more effect upon salaries than any other single study or any other single recommendation. Certainly, salaries would have gone up as a part of the inflationary spiral. Whether they would have gone as high as they did go, is another question.

I think there are one or two problems that Herb did not overlook. He has them in his outline, but he did not speak about them. I think he just got tired. One is the problem that is posed by a salary schedule. There have been a great many salary studies made based upon salary schedules. Salary schedules are completely meaningless by themselves. You need to know not what the minimum and the maximum salary on a schedule is, but what is the minimum and the maximum salary actually being paid. I can show you salary schedules where nobody is anywhere near the maximum and other salary schedules where there is nobody near the minimum. So that the use of the salary schedule as a basis for study other than academic interest serves only to show what the possibilities are within a given institution and not what the actualities are.

There is another problem that I suspect faces every institution represented here, and that is the question of what to do with part-time faculty, non-regular faculty. Should they be included in a salary study? This cooperative group has decided that they should not be so included, because their salary, whatever it may be, is dictated by the circumstances of the individual case. You might hire a faculty wife to teach a three hour course in English and if the normal load is twelve hours, you will pay her somewhat less than ¼ of a regular instructor's salary. On the other hand, you may be in a situation where you are badly in need of an advanced physicist and bring in someone from the Argonne Laboratories to teach a three hour course. Here you may pay him double the amount that he might get for a three hour course if he were a part of the regular staff. So that if you include a part-time person you never know to what degree, or in which direction this individual is influencing your averages or your medians as the case may be.

It seems to me that there are a variety of ways of reporting. Salaries can be reported in simple tabular form. They can be reported in chart or graph form. This is largely a matter of how you intend to use the particular material. The simpler you can make the comparisons, the better off you are. Now we all know that in the whole gamut of institutions of higher education, there are some institutions with high salaries, some institutions with average salaries, and some with low salaries. The question may well be raised, "Of what advantage is it for the top salary institution to participate in a salary study?" Apparently, they have nothing to gain by comparing themselves with people whose salaries are obviously below theirs. For that group I think it becomes a matter of a professional obligation to help their fellow man. Obviously, the individual institution that is at the bottom of the group wants to be in a position where it can get all the data so it can say, "Look at all these people up above us here."

There is another side to this top institution. Herb's institution now says it wants to be third. This means that if it wants to be third, it is getting into a position where it can steal some of the people from the institutions that are in first or second place. Not only it can, but it will, I am sure. It behooves the top, or the second institution in this instance, to keep informed as to how close on their heels the rest of the people are. Because, if you are comfortably at the top this year, you can easily be sixth, seventh, eighth, or tenth next year--because you need to know exactly what is happening over a period of time.

Herb emphasized that salary is a function of time. It is a function of time as far as the period of employment is concerned, but it is also a function of time as salaries move from year to year to year. To know where you are today on the salaries that you are paying this year does not do you a bit of good for next year unless you know what other people are planning to do; if you can not find out what they are planning to do, find out as early in the fall as possible what they did. You can easily sit back and find yourself very comfortable at the top until next year's study comes out and then you are no longer at the top.

This business of salaries is a very touchy subject. It is touchy because it is the one thing that touches on every member of the faculty. You may have difficulty in interesting the members of the faculty in an enrollment projection, or in a space study but he is certainly interested in what the salary study shows. In all probability the result of a salary study or a series of salary studies will have an effect on his pocketbook. As a result of that study the people who represent him are going to be able to get him more money for next year or they are going to decide that he does not have any more coming for next year, or maybe, although I would trust not in the forseeable future, he will take a cut next year. I am not talking of the individual faculty member; I am talking about the faculty member as a generic term where the whole faculty is interested in exactly what the salary study is going to show.

This is a pretty emotional type of thing. It is the kind of thing that people get excited about. It is the kind of thing that, if you make a mistake, has immediately measureable serious consequences. If Herb transposed a figure in here, which might be a figure of 6807, as a mean salary for a given institution, --If through a typographical error this becomes 8607, and the President of that institution looks at this and says, "Well look, you are way up here." And he might not even bother to check to find out what the average salary is. He says, "8607 is a typographical error, it should be 6807, or it may be a mechanical (mathematical) error."

This is why this kind of data needs to be checked, rechecked, double checked, proofread and then proofread again, before it is ever issued. You can do an incalculable amount of damage to some institution and some faculty if you make a mistake. Of course, this is true in theory in all sorts of research. You can make a mistake in an enrollment projection. There are all sorts of excuses for it, and there are all sorts of reasons for it. You can make a mistake in analysis of space use. You could excuse this, unless it is a terrifically big one, so that you come up with an analysis of space use to indicate that you ought to have a four million dollar building when, as a matter of fact, you do not need a new building at all. However, this is one that you will have a hard time selling. But this one is so full of emotion, and realistically so full of a certain amount of opposition to change, that you have got to be right, at least as near right as it is humanly possible to be.

These problems are not simple. The kinds of definitions you have to arrive at are not simple.

HOWELL (IN ANSWER TO A QUESTION):

It costs more to live some places than it does other places even though the dollar salary is the same so that your real salary, in terms of goods and services, even though equal on a dollar basis, is not necessarily equal in real goods. When it comes to salary I think that the emotional attitude, or whatever else you would like to call it, is the same among all people, for the dollar. It has a tremendous effect. I am sure that in our institution we lose some people that we would like to employ and we lose some people that we have employed because they can move at the same salary to some place where the cost of living is 20% less, which is equivalent to a 20% increase in salary. So far as I know, no effort has been made by anybody to include an index to cost of living. If anybody knows of such a study I would like to be referred to it. I know of no study that has made it between institutions, salaries in '39 to '62, equated on the changing value of the dollar, but as between institutions located in varying cost of living areas.

QUESTION:

Let me ask an unfair question. You have very especially stated the advantages of your particular study. Do you use nationwide studies, such as from the N.E.A., or the Office of Education to make comparisons with your own?

HOWELL:

Oh yes! That is . . . now wait a minute. As a group I can not answer. As the separate institution, if you are asking what we do at Northern, we make comparisons with every salary study we can find anywhere.

QUESTION:

Let me ask you the second part of this question. Would it be better, then, to have studies on a nationwide or regional basis than on a relatively local basis or of a particular type?

HOWELL:

If we could get a salary study that is participated in by all institutions, on a basis which could be agreed upon as comparable, I would think this would be ideal. The difficulty is to get this agreement . . . to accept, and then interpret within the limit of an agreed-upon definition.

ESCALARA:

Did the N.E.A. make a salary study which was divided into geographic locations?

HOWELL:

Yes, they made it by Northeastern, Middle Atlantic, Middle West, North West, and so on.

QUESTION:

What are the real virtues of this cooperative research group?

HOWELL:

It started out rather small and is now 40 odd institutions. It started out with few institutions, and of course, it is regional, for the Midwest. At least it is more meaningful to have a comparison at this time for Illinois or Indiana or New York or some other state. This group is now large enough so that although there are fairly wide ranges of institutions by size within this group of 45 that almost any of us can find a group of half a dozen or eight or ten of relatively the same size and pretty much the same origin and tending to develop along the same lines of program. So that there are all sorts of smaller group comparisons within this larger group of 45 institutions. It has been a peculiarly useful study. I think all the university studies or the very growth of it attests to its usefulness.

SILVEY:

I probably should have indicated that most of the group here represents institutions outside of this group. I should apologize because you maybe do not know whom we are talking about. This co-operative group that we have been making reference to is made up of state colleges and universities that started out originally as teachers colleges and some like DeKalb, changed their names, but essentially of this kind in these states: Ohio, Illinois, Iowa, Indiana, Minnesota, Michigan, Wisconsin, Colorado, Oklahoma, Kansas, Nebraska, and North and South Dakota. Any other questions?

FOURTH SESSION

Presiding: **Milton E. Carlson**, Assistant Director,
Bureau of University Research, Northern Illinois
University.

PROBLEMS CONCERNED WITH FACULTY LOAD STUDIES.
Speaker: **John M. Evans**, Vice President, University
of Connecticut.
Discussion: **Wesley Arden**, Director, Institutional
Cost Studies, Purdue University.

THE ROLE OF INSTITUTIONAL RESEARCH IN ADMINISTRATIVE DECISIONS.
Speaker: **Francis R. Geigle**, Executive Vice President,
Northern Illinois University.
Discussion: **Edward Stout**, Registrar, DePaul
University.
Leo M. Corbaci, Assistant to Academic
Vice President, University of Notre Dame.

CARLSON:

Our speaker, John M. Evans, currently holds the position of Fiscal Vice-President at the University of Connecticut. He did his undergraduate work at the University of Pennsylvania Wharton School and graduate work at the University of Indiana.

He taught in the Business Management Department at the University of Oklahoma for two years and then accepted an administrative position at the University of Indiana. While at the University of Indiana, he served in various positions: Head of the Internal Audit Section, Institutional Budget Officer, Head of the Bureau of Institutional Research, and Assistant Business Manager. Mr. Evans has also served on the central staff of the California and Western Conference Cost and Statistical Study which was financed by the Ford Foundation.

His many and varied experiences make him well qualified to speak on the topic of PROBLEMS CONCERNED WITH FACULTY LOAD STUDIES.

May I present John M. Evans.

EVANS:

In approaching our discussion of problems concerned with faculty load studies, I wish to point out that, in my opinion, the problems are numerous and I do not have perfect solutions for all of them. I do, however, appreciate the opportunity to outline briefly what I think are the major problems and some of the alternative solutions to them. This, I hope, will stimulate discussion pointing, at least to a degree, toward common agreement.

Let me first set the stage by reviewing the development of Institutional Research and its interest in analyses of faculty workload. During the last ten years, there has been increasing evidence of a need for the accumulation, consolidation, presentation, and analysis of data which quantifies the operational activities carried on in institutions of higher education. These data are required in the formulation of major educational and administrative policies. They are also required for a scientific evaluation of relative economy and efficiency in carrying on our present day-to-day activities. I sincerely hope it is not our intention as institutional research workers to establish norms or standards which a university will use as a frame of reference. The policies within which institutions of higher education operate cannot, and should not, be standardized. The individuality of our colleges and universities has contributed in large measure to the greatness of our educational process and its significant contribution to the economic, scientific, and social well-being of our nation. This individuality must not only be protected, but encouraged.

Many of us are becoming somewhat critical of the current trends in Institutional Research. Our bureaus originated with the objective of compiling and presenting facts and figures as to what was being accomplished in higher education. This information was intended for presentation to top administration and our Boards of Trustees in order that they, having a clear picture of our present operation, would be in a better position to formulate educational policies for the future.

When I say that our organizations started out to accumulate facts and figures concerning our present operation, I mean just that. Top management was interested in having timely reports of the available square footage of space classified by function. They wanted periodic reports concerning the effectiveness of our space utilization portrayed in terms of room utilization and student station utilization. They were desirous of having specific knowledge of what our class sizes were, and they were also interested in having complete and detailed studies made measuring the functions performed by our professional staff members. It should be obvious, even to the uninitiated, that such information is necessary to first, enable us to explain to the public and legislators what is being accomplished in higher education; second, provide a scientific basis for planning our future requirements in terms of physical facility needs and faculty staffing requirements; and third, allow major institutional policies to be established after full consideration of the facts.

My foregoing statements, if correct, would indicate that we started out as fact finders. The essential framework of facts which we were to compile and present for the edification of top administration and the Boards was fairly well established. My criticism of the current trend is that we are beginning to deviate materially from the original objectives and are losing sight of our role as fact finders. I am disturbed, and to no small degree, because even before we have completed the task originally assigned to us, we are contemplating assuming more difficult functions which I seriously doubt are any of our business.

Institutional Research forums which I have attended recently have concerned themselves with questions such as (1) What are the qualifications of a good teacher? (2) How can we measure the effectiveness of existing teaching techniques? (3) How can we measure the quality and effectiveness of research being done in our universities and colleges? I am not attempting to take issue with the necessity for such studies. I do believe it would be well, however, if we would complete our original task and quantify that which people question the quality of. I also have the personal feeling that arriving at norms against which we can compare our faculty members and evaluate the quality of the teaching process and research effort is more appropriately the task of capable faculty committees rather than an administrative division of the University.

Assuming then that you are interested in faculty load studies within a framework of quantifying what we are accomplishing in our present operation, I will continue by pointing out what I think our major problems are and discussing possible solutions to them. We are all interested in comparing the accomplishments of our institutions with those of similar schools. Comparisons can serve to highlight variations. Variations logically dictate the desirability of discussions between institutional officials about the policies and procedures causing the indicated variation. Such discussions can lead to affirmation of existing policies or questioning and changing policies in the interest of greater economy and efficiency.

[illegible] - When we hire a faculty member, what function [illegible] paying him to perform? Can we, by definition, [illegible] activities carried on in the daily life of a professio[illegible]ulty member which fall within the limits of his contractual relationship with the institution? As you are probably aware, this is not an easy question. A professional man in higher education, whether he is active in instruction, in research, or both, considers himself to be dedicated to his profession. If we are willing, today, to forego quibbling about the few marginal people we would have to agree with this statement. We would have to agree that the university is not paying a man for a given number of hours of work a week. When the individual is reading, writing, grading papers, doing research, or counseling students, he is performing work-related functions - whether these functions are performed in the laboratory, in the classroom, the student union, in the library, or in the home, they are still work-related functions. We must also consider off-campus public service functions, such as work performed for professional, civic, and service organizations.

If our analyses of faculty work load are to be exchanged and compared between institutions, we must achieve uniformity by agreeing on what it is we are paying for and what shall be included in the work load studies. I am not certain that we can or that we should accept the philosophy that every move a faculty member makes is part of his contractual relationship with the institution. There is, in my opinion, a segment of effort expended by a professional man in a university which is selfishly directed toward personal advancement, both in terms of salary and rank. The word "selfish" is not used here in any critical sense. Individual selfishness is basic to the make-up of a human being and a necessary ingredient for progress in an organized democratic society.

Let us for a moment look at industrial organizations. Employees engaged in economic activities outside of higher education are motivated by the very same selfish interests. They, on their own time, by many means, are engaging in self-study and self-training. Industry, to my knowledge and in my experience, does not consider this to be part of the contractual relationship. Admittedly, the dividing line is much easier to distinguish in industry than in higher education because the reading a professor does may simultaneously be contributing to his teaching, research, and the outline for a book he plans on writing.

In approaching faculty workload studies, we cannot define a man's job in terms of a given number of hours per week, for example, 40. The great majority of our faculty members work far in excess of a 40-hour week and the exact number varies considerably from individual to individual. We cannot define a man's job in terms of a standard teaching load as is done when a school says an individual cannot be doing any research or public service work unless his teaching load has been reduced from the standard. Such an arrangement leads to many inaccuracies and inequities.

I believe the solution in defining a man's job rests in a more formal understanding between the individual and his department head and dean. Our studies of the teaching and non-teaching duties performed by a faculty member must be based on assigned duties. This means that annually more attention must be given to what the institution is hiring the man to do. Too often there is complete disagreement between a man and his department head or dean as to what his non-teaching duties are (particularly in the areas of research and public service). This should not be and would not be if proper formal communication existed as to prior intent.

Problem number two - Can we agree as to the functions to be performed by professional staff members and definitions of the agreed-upon functions? There is general agreement that the accepted university functions are instruction, research, and public service. A portrayal of faculty time utilized in these three major categories is fine for satisfying external objectives - namely, public relations and fund raising. It is not, however, in sufficient detail to satisfy our internal objectives - namely, making data available for use in evaluating existing administrative and educational policies.

May I suggest the following classification for the analysis of faculty workload?:

1. Instruction - includes all time spent in connection with the total teaching responsibility. This includes grading, preparation, and consultation with students assigned to the staff member in formal classes or under individual study arrangements.

2. Administration of Instruction - this is intended to include all academic departmental administration and also time spent directly or as a committee member on matters pertaining to scheduling, curriculum development, building planning, and counseling of students not assigned to the individual for instruction. In the development of unit cost studies and for use in public relations this block of staff time is usually combined with instruction and titled "Instruction." For internal administration the data are separately evaluated.

3. Sponsored Research - sponsored research can be defined as research supported by separately budgeted funds from outside sources, such as those derived from Federal agencies, foundations, or industry. One question raised in this connection is whether or not the time of the principal investigator, not paid for under the grant, should be identified as sponsored research or university-supported research. In my opinion, it is more appropriately categorized as university-supported research.

4. University-supported Research - another title which is popularly applied to this type of research is "faculty research." It includes all research supported by the institution's general funds as a part of the individual's assigned duties. In the case of sponsored research the approval of the grant identifies the project as research. In the case of the university-supported research, we must define what can be included. I personally feel that research carries the strong implication of an addition to the existing fund of knowledge. Extensive reading and experimentation performed primarily as preparation for teaching and supervision of graduate theses should not be included here. Such time is more appropriately included as part of the instruction function.

It is inevitable that faculty members will want to claim all kinds of activity as part of their research effort. Here again, with the size and complexity of our institutions, informality frustrates control. We must think in terms of an annual formal agreement between the individual and his superiors as to what faculty research is allowable as part of the employment contract. In order to facilitate quantification and administrative control, I believe it will be necessary to budget each university-supported research project separately. With all sponsored and university-supported research treated as organized, separately-budgeted projects the problem of determining whether or not they are part of the man's job will have been resolved.

5. Public and Professional Services - included under this title should be time spent on such organized activities as non-credit instruction (reading, hearing, and psychological clinics, as well as adult education), government and business research bureaus, state school surveys, agricultural extension activities, and recognized professional organizations. Once again I must emphasize that time of individuals allocated to this function must be capable of documentation. For internal use the data should be reflected in terms of the several categories listed above as falling within the major title.

Problem number three - Are we interested in arriving at the dollar cost of performing these functions? If so, we must apply the percentages of time to the salaries of each individual. By so doing, we can arrive at the direct salary cost of the functions. The determination of total costs involves allocation of all institutional costs of administration, student services, indirect costs within instruction and research, and operation and maintenance of physical plant. Frankly, I recommend going all the way. The public and administrators are interested in knowing the total expenditure of the various services, and the only truly acceptable answer lies in a detailed analysis of the total general fund expenditure.

Problem number four - Does our interest and desire to accomplish faculty load studies include an interest and desire for faculty teaching load data? I believe it does. I also believe that since it does, we must segregate the volume of non-teaching functions in order to have an accurate picture of the university input in terms of faculty effort. We can successfully combat the traditional practice of dividing total students by total faculty only by providing the faculty equivalent which truly relates to the student load. In short, we must isolate the portion of our faculty performing one function from the portion performing another.

In closing, may I say that our biggest problem is caused by the informality of our administrative practice. We are trying to measure what would appear to be contractual relationships. The weaknesses of informal verbal arrangements obviously are creating disagreement. It may well be that what a faculty member is to be paid for and expected to accomplish must be expressed in writing. This expression could take the form of percentages appearing opposite the man's name in the institution's annual budget; for example, instruction - 80%, research - 15%, public service - 5%.

I would also make a plea for more attention to be focused on cost studies and unit cost studies. We can no longer claim that higher educational functions and costs cannot be expressed and justified in terms similar to industry. If we do not do the job, someone will be brought in to do it for us.

CARLSON:

To lead off our discussion we have Wesley Arden who comes to us from Purdue University, where he holds the position of Director of Institutional Cost Studies. Mr. Arden received his B.A. degree from the University of Kansas. He has been a consultant to a number of universities in the development of punched-card procedures for budget control, general accounting, and cost analysis procedures. His principal interest is "cost analysis for universities" in its broadest sense as an administrative tool which will provide data, (not only in dollars but other quantative data as well) for the evaluation of existing and proposed educational practices to aid decision making.

They, at Purdue, have developed a procedure which will permit them to project present or proposed practices into future periods without relying on the concept that costs are linear to the number of students. In order to speed up this whole process they are now moving as rapidly as possible to stored programs on computers. May I present at this time, Mr. Arden.

ARDEN:

I understand from the comments on the program agenda that discussion means discussion. I will try to limit my comments, so that there will be time for discussion from the floor. There are many things I would like to talk about to this group of people, but this is not the time, so I will try to limit the discussion to a few points that Mr. Evans has brought out, points on which we may not fully agree. Perhaps the discussion may reveal that we are nearer to an agreement than we think.

It seems desirable to repeat a comment which Mr. Evans emphasized; "I am disturbed because even before we have completed the task of collecting data, we are contemplating assuming more difficult functions which I seriously doubt are any of our business.'

From his point of view as the business administrator and from the cost analyst's point of view this is a serious problem. The business of Institutional Research tends to divide into two major areas. The first is the recording, analyzing and projecting of data concerning staff, students, space, libraries, and the general services which are required to implement and coordinate the total operations. The second tends to be concerned with factors which are somewhat more difficult to record, analyze and project. This second area tends to be concerned with the quality of the environment for learning, in terms of curriculum, teaching methods, selection of students, grades, and many other rather abstract problems.

At Purdue University the two functions are separated. My part of the task is to supervise a continuing analysis of the factors indicated under first areas of Institutional Research. We have developed concepts, classifications, and methods which we feel are quite effective, but are still intent on improving our results. We are especially aware of the limitations of data concerning the relationship of indirect cost factors to the direct teaching factors and are trying to find realistic ways of improving this data.

I am not in a position to judge the quality of teaching. It is obvious from the many comments that many educators think there is a relationship between cost factors and the quality of the "environment for learning." Perhaps most of the people here, by virtue of many academic degrees, and much advanced training and experience in education are prepared to make these judgements.

The two areas of study are obviously necessary. Whether they should or should not be incorporated into a single department of Institutional Research is a problem that will vary largely because of the background of training and experience required for each function; and the availability of persons to perform these functions.

Mr. Evans apparently feels that the problems of collecting the factual data must first be understood and be well organized before the second phase has a chance to function effectively. This is to some degree true, but the two areas overlap only partially, and therefore can operate independently in some areas. In others it would certainly be wise to relate the more objective data with such measurements of "quality of instruction" as the faculty and institutional research can make available.

Industrial organizations have a similar problem. There is usually a cost accounting department which records, analyzes and projects cost data. There is also in some form a quality control group, which depending on the nature of the operation, will include product designers, engineers, sales personnel, and statisticians. Sometimes this group is concerned with relating cost data to quality, sometimes the quality control is concerned with customer requirements and reactions which may have little relation to cost factors. It seems that all institutions, educational or otherwise, should be concerned with integrating all data that can be useful to management.

Mr. Evans raised a question regarding the methods of securing data about faculty work loads. He implied that technical institutions are different and that it is easier to secure data in such institutions than it is in liberal arts institutions. Perhaps there are such differences, but it is also possible that these differences are the result of other factors; such as the feeling that traditional authorities are being challenged, that data will be inappropriately used, or that because of inadequate communication the persons responsible for providing the data are not aware of the significance of the data for administrative purposes. This last reason involves some "salesmanship." Certainly every department head (possibly every staff member) should be made aware of the need for providing the cost data that is so important in securing from legislatures and other agencies, funds needed to extend the educational opportunity to the increasing volume of students.

In the eight years that we have been interviewing department heads, we have always tried to make clear the reasons for securing the data, and to indicate how the data would be used. When we used terms that might be misunderstood we were careful to define the terms. Usually the first interviews were conducted with several representative department heads, who were aware of the significance of our problems. These persons were invited to be critical of the form and content of questions. It was one such department head (in the Division of Education) who commented, "The questions you are asking are not new to us. Every department head has been aware of and has answered these questions in making the decisions and staff assignments that must be made, but they are somewhat concerned over having them so carefully recorded."

Out of these questions we developed a set of values for each type of class (lecture, quiz section, laboratory, individual instruction, etc.) within each course. These values are used to determine the significance of each teaching assignment in terms of full-time-equivalent staff (semester basis). These factors are:

1. Number of class hours involved (F.T.E. value per class hour is .025).

2. Preparation time. This includes the time for study of new materials because of the changing content of the course, or the existing knowledge in the field. It also includes review, preparation of materials and examinations for each class meeting. This factor can vary from a small factor to half of a teacher's time.

3. Per student time. This includes labor involved with student manuscripts, notebooks, examinations, grade records and reports, and the like. It also includes time for course related individual student conferences, outside of class time. These factors can also vary a great deal, as for example; in gym class, or an English course which requires a theme from each student each week.

The above values applied to each of a staff members assignments produce a total value for the staff member which obviously does not add up exactly to F.T.E. staff time available (from payroll records). If there are no assignments for a full time staff member (1.00) other than teaching and the values add to some other figure (for example: 0.96 or 1.05) all the values are increased or decreased on a pro-rata basis to total 1.00. If there are special administrative, counselling, or research assignments these are given values by the department head, and are subtracted from the total F.T.E. staff before the preliminary course values are prorated. By studying and changing these values of preparation and student time when they do not seem to fit, we have developed a set of values which work well, in spite of the occasional staff member whose assignments make him look like two people.

The above methods are in accord with the counsel of a statistician who said it should be possible to determine, by statistical evaluation, the values that the department head places on his staff assignments. He indicated also that it was a time consuming process since there are only two useful observations per year. He recommended the interview questions as providing preliminary approximations which would speed up the process of determining the values.

The procedures for collecting data on staff assignments begin as a by-product of Purdue's machine scheduling of students. The information includes a record of courses offered, enrollments, and the time patterns for the various divisions. The departments add to this, the staff and space assignments. The time values are used to calculate the preliminary F.T.E. staff time. Not until this has been done are the Staff Service Reports prepared. Since staff and space assignments have been edited for conflicts and errors, and enrollments for all divisions are known, and all this data is checked to controls, the service reports require no editing or checking in the instructional departments. They also provide a two way communication of preliminary assignment values, and a mechanism for transmitting non-teaching assignments to the Cost Studies department. The above is aimed at securing at an early date for each term, information on staff loads, class size, space utilization, teaching costs, and other data which can be used for administrative decisions, for the projection of future needs of staff and space, for unit costs, for budget estimates, and for sound justification of budget requests.

One other item mentioned by Mr. Evans raises the question about limiting cost data and studies to the general current fund (or funds). It seems that this is undesirable. Every institution which has research projects or contracts for performing other public services must for several reasons know the impact of these activities. Many of the research contracts require the determination of overhead rates, and certainly these should be determined even if they cannot be fully collected. Instructional services are sometimes provided through such research. Many graduate students receive incomes which enable them to continue their graduate studies. All of these facts require analysis and understanding to keep them in proper perspective.

There are many other items in Mr. Evans paper which we could profitably study and discuss. Time is limited. Come to Purdue; we will be pleased to meet with you, and discuss the many problems to which we must all find solutions.

CARLSON:

Thank you, Mr. Arden. I see we have a little time left in this session. Do we have any questions?

LINS:

I'd like to address this question to Jack Evans. First, allow me to compliment you, Jack, on your very fine speech. We need not only quantitative but also qualitative analyses of faculty work. We want to know not only how many hours the faculty member is working in the various aspects of his task, but also how effective he is in carrying out those tasks. I wonder whether we, as persons concerned with providing data relative to the entire institution, will not necessarily become concerned with quality of instruction, with the effectiveness of teaching, and with the effectiveness of faculty research?

I wonder whether all of us recognize the role of good teaching in meeting the goals of our particular institutions. I feel that many faculty members, many departmental chairmen, and many of us, have not had a great deal of experience in objective evaluations of teaching. I wonder if we should not be working with others in developing measuring instruments for this type of evaluation?

EVANS:

Joe, I couldn't agree more with you. You remember I mentioned that I took no issue with the fact that this evaluation of quality needed to be done. But, I am a very practical person. I do not know how fortunate you people are, but in my experience, in the frustration of limited dollars within a bureau of institutional research, they probably give you one director, maybe an assistant, and you are lucky if you get a clerk. Now, with an atmosphere of limitation, such as we are working under, I think it is largely a matter of first things first. And my argument is not with the fact that an expression of evaluation of quality is needed. My argument concerns accomplishing it with the limited staff and with the limited dollars we have in a typical bureau as it has been established within the last ten years.

All of our energies must go towards doing that which is needed to aid in the evaluation of administrative policy. We must first go about trying to find the operational activities of the institution. Then if we find that we have an excess of time available, we can proceed. I must caution that even here I would be reluctant to let my men loose on the determination of the quality of teaching or research. I would much prefer to have the faculty do it or the faculty direct that we do it in cooperation with them. You see, I think in the last few years the emphasis on bureaus of institutional research has tended to have top administration acceptance, and while the bureaus are often staffed with the accountants or the statisticians which they picked up eight years ago, it has such a popular flavor at this point that they are hiring true research men, academic research men. This is one thing we found in our discussions in Chicago. When you have a Ph.D. in Mathematics put in as head of or a director of the Bureau of the Institutional Research, he will get tired of doing the repetitive routine quantities of operational data which we have visualized as our task. In many cases, he becomes bored with it before he gets started. Another thing that has caused problems in my opinion: In a Bureau of Institutional Research as started in the typical university, not only is the director above and beyond the type of routine cost accounting qualification that we are dealing with or working with, but this does not interest him. He wants something more challenging and he gets into the evaluation of quality roles because he is bored with what he started out to do. So, in addition, he attempts to do this sort of thing, a typical faculty work load study, and he finds an extreme resentment on the part of the faculty. So he turns to that which he can accomplish and in many cases this becomes student retention, the quality of research, the quality of teaching.

I am not against it; the only thing I say is that the staff I have does not have the time to do it. If they did have time, I would not assign it to them, because I do not have the authority to assign a job to them that involves an evaluation of performance in the instructional or educational research activities of the institution.

CARLSON:

Dr. Geigle has on different occasions and in different collegiate institutions served as department head in Business Administration and Business Education. He came onto the scene at Northern Illinois University in 1951 as head of the Department of Business Education, and in 1954 became administrative assistant to the President. A few years later, in 1957, Dr. Geigle became Executive Vice President, which is the position he currently holds. As you can see, he has had considerable and varied experience in both the instructional and administrative areas. May I present at this time, Dr. Geigle.

GEIGLE:

American higher education is involved in a quiet revolution and a noisy debate. It is becoming increasingly evident that more attention, time and effort are being paid to the science of administration. The reasons for this revolution and debate are obvious when we look at the changing scene in higher education in your own institution or any other institution, public or private. Administrators can no longer base their opinions completely on hunches and are finding it necessary, due to the complex problems of modern higher education, to make decisions on determined facts and controlled experiments.

Last fall a group of 38 faculty members here at Northern, including instructional and administrative staff, met for an entire day at our Lorado Taft Field Campus to discuss specifically the next decade in curriculum development at this institution as well as any other prognostications or prophecies. We often refer to this group as our "Think" committee. The suggestions and predictions that emanated from that conference were quite similar to the forty predicted changes that are coming in colleges as reported by Paul H. Davis in the March issue of the Journal of Higher Education. Among these forty changes, Davis mentions:

1. Changing and increasing enrollments, graduate and undergraduate.
2. The emerging role of the junior college.

   (Someone predicted that the growth of the junior college is the only factor which may help to turn this quiet revolution in higher education into an orderly process of peaceful change.)

3. The changing college calendar and school day.
4. Programmed learning and the role of television in higher education.

   (One of the "sacred cows" in education is the premise that effective learning requires the physical presence of a live teacher. Educational television is probably placing education on trial faster than any other medium.)

5. Utilization of space.
6. Class sizes.
7. Student programming and the curriculum.

   (It is easier to move a cemetery than to overhaul the curriculum.)

8. Measuring determination, stability, integrity, motivation.
9. Examinations.
10. Teachers' salaries.

11. The problem of selecting administrators for their abilities as administrators rather than their scintillating personalities or superior speaking ability. Teachers will spend more time in teaching, and administrators will spend more time in administering.
12. Processes for evaluating and reshaping educational programs.
13. Finance.

    (Higher education, to do the job, needs more money and a willing, rather than a reluctant participation, is required of all segments of our society. At the same time, however, institutions must stand ready to indicate what values they are giving for the dollar.)

14. How big should the university or college be?

The day of the simple problem in higher education, if it ever existed, has long passed. It is the day of "complex problem proliferation." Now with all those changes, I could probably stop right here and say that to me this is the role and the importance of institutional research in administrative decision-making. It is quite obvious and clear that, in the face of all these problems, someone is going to have to assist the administrator in doing something about and bringing about some solution to the so called quiet revolution and noisy debate.

It is plain that administrators will be requesting you to address your efforts to the many facets of these problems, for many of these changes will not come easily and without considerable debate. In fact, Paul Davis read his forty changes to one faculty and a professor suggested most predictions of extensive change underestimate the enormous powers of resistance built into college faculties. And a professor of another college warned that faculties have thrown out many a college president--and trustees, too--who tried to reform them and can do it again if necessary. Davis, however, predicted that in the decade ahead the greatest change will be in the attitude toward change.

At this point, I would like to say something about decision-making on the part of the administrator, for this responsibility is the central and continual business of every human enterprise. It can be sound, deliberative and judicious; and on the other hand, it may be unsound, habitual, automatic and haphazard in character. It should never be said, as Carlyle put it, that "some people are noted for fussy littleness and an infinite deal of nothing."

It seems to me that the basic consideration to keep in mind is that administrative problem-solving is essentially a process of reflective thinking or researching for a wise decision. In the last analysis, research per se constitutes a method for the discovery of truth, which is really a method of critical thinking.

While it is desirable or even essential to institutionalize research in a bureau of research, an administrator who makes use of the services of such a bureau needs to do his own research or reflective thinking in formulating and justifying his chosen course of action. The problem involved should be carefully defined and analyzed; time should be taken to assemble and evaluate pertinent data and analyze the existing situation; care should be exercised to formulate a wise plan of action; and sound judgment should be shown in the selection of a sound policy or principle on which the solution or plan of action is justified.

The time factor involved in this reflective or research thinking process may require much time or a relatively short time, depending on the urgency and nature of the problem and the administrator's competence and expertness in problem solving. Hasty or thoughtless decision-making is never in order.

Frederick W. Taylor first gave emphasis to the idea that scientific techniques should be substituted for intuitive and "rule of thumb" approaches to decision-making. Consequently, in commerce and industry, we have the relatively recent development of a powerful technique known as "Operations Research," an extension of Taylor's basic philosophy.

Nevertheless, a significant amount of administrative decision-making involves intuitive processes that occur in some fashion in the human brain and frequently results in the solution of highly complex problems.

Someone has compared this intuitive process to the problem facing the driver of an automobile in deciding whether or not to pass a truck with a bus approaching from the opposite direction. An experienced driver somehow takes into consideration:

1. the speed of the truck
2. the speed of the bus
3. the distance between the truck and the bus
4. his own speed
5. the rate by which his speed can be accelerated
6. the possibility of being passed by the automobile behind him
7. the possible changes in the speed of the truck or bus
8. condition of his automobile and the roadway

Most drivers experience little difficulty in passing or not passing a vehicle under these conditions. The decision was made without a conscious measurement of the variable or mathematical calculation.

Many administrative decisions seem to involve similar processes to those involved in driving an automobile. A number of successful executives have expressed views on how they make decisions.

Charles Cox, president of Kennecott Copper: "I don't think businessmen know how they make decisions. I know I don't."

Benjamin Fairless, former chairman of U.S. Steel: "You don't know how you do it, you just do it."

Dwight Joyce, president of Glidden Company: "If a vice-president asks me how I was able to choose the right course, I have to say, 'I'm damned if I know.' "

John McCaffrey, president of International Harvester put it another way: "It is like asking a pro baseball player to define the swing that has always come natural to him."

It is within this framework of decision-making: the intuitive approach on the one hand and the careful analysis of pertinent data involving reflective thinking on the other, that the institutional researcher must work. Knowledge or know-how can come from many sources -- education -- experience -- observation -- research. Even though many of your reports of findings make for heavy weather in reading -- there is no reason to believe it will not make administration more effective and more understandable, particularly if the studies are carried on by persons with a broad, unobstructed view of the institution.

In an expanding institution like Northern, problems arise involving the community, housing, transportation, parking, and a host of other pressing problems. The Bureau of Institutional Research in cooperation with our Housing Office made a study of "Where Students Live in the DeKalb Community." I delivered a copy of this study to a member of the City Council on Monday. They wanted some answers and we had them.

An exceedingly helpful study was "A Comparison of the Growth of the College at the Undergraduate Level, 1951-1961, as Compared with the Growth of the Various Academic Departments on the Basis of Majors, Total Enrollments, and Total Credit Hours." This study also included some comparisons at the graduate level. This study showed the index of growth by department from 1951 to the present. Administratively, this index provided the basis on which projections were made by departments thus making it possible to estimate needs for new staff as well as needs for space. This was very important to the administration. In the state of Illinois we are on a biennial basis. We will start working out the biennial budget this spring for the year 1963 to 1965. We are actually three years ahead, and any facts and figures from our institutional research bureau to help us in trying to predict what we need in the next three years, in terms of space and buildings, is of tremendous value to us. And this we were able to do. In fact we have not changed our original predictions in terms of the staff needs. The study also provided certain basic data in projecting the overall organization of the university.

The Bureau is making a yearly study of the socio-economic backgrounds of each entering class. If we are going to give emphasis to providing richer and greater numbers of opportunities for the talented, we need more objective data in order to make such a determination. In this respect, I noted with interest a statement from the University of Illinois concerning the purposes and program of the Office of Institutional Research. This office, collaborating with the Office of Admissions, is recording and processing similar data. Dr. Lanier, Executive Vice-President, stated, "The availability of this common pool of data will serve a variety of administrative purposes, in addition to providing a foundation for research on admission policies, instructional programs, and the impact of the extracurricular environment on student achievement and values."

Other helpful studies included, "Projection of Building Shortage from 1951 to 1967" which assisted us immeasureably in planning for buildings to be financed out of the state's Universities Bond Issue. Other studies of great value were "A Study of the Existing 'F' Policy at the Undergraduate Level and the Current Assignment of Honor Point Values," "A Study of the Tax Loss to the DeKalb Community in Comparison with other Economic Gains by Virtue of the Expansion of Northern Illinois University."

In conclusion, allow me to make a rather general and perhaps pertinent observation. We must capitalize upon our freedom to provide leadership within education as a whole if it is to justify its continuing existence. All of us are immediately and necessarily related to public needs and demands. We need to pioneer and innovate. There will always be new and better ways to teach mathematics, and history and economics and science. There will always be new methods by which teachers and superintendents are trained and motivated. You must find that our teachers and our administrators are more competent, that your research results are more significant and more relevant. Some of this pioneering effort will prove false; but, by and large, most of these adventures in the field of education will turn out to be sound, and they can be safely adopted by all institutions. So long as we use our freedom and flexibility to develop new patterns we have a contribution to make to American education. Abraham Lincoln said: "If we could know where we are and whither we are tending, we could then better judge what to do and how to do it."

It seems to me that this pretty well sums up the role and function of institutional research for administrative decision making. You can do much to aid administration in facing the challenge of making education effective, and doing it well.

CARLSON:

I would like to call upon Mr. Stout as our first discussion person. Mr. Stout is a DePaul University product, having received both his bachelor's and master's degrees from there. Following the Second

World War, he joined the DePauw University Administration as Assistant Registrar and was appointed Registrar in 1952. This is the position that he currently holds. I would like to take this opportunity to introduce Mr. Stout.

STOUT:

I am very interested, Mr. Geigle, as I am sure we all were, about your mention of the "Think Conference," especially because your instructors mentioned the fact that they were glad that they were able to get the administration down to their level. I think that if this would have happened at our place, the comment would have been that they would have been glad to get the administration up to their level. In all honesty, we must admit, that most of our research is the result of just plain curiosity. It is done by direction of the faculty, by department heads, deans, faculty committees, or perhaps even individual faculty members. Also by direct request of the president. This often carries with it the virtue of priority. In most instances, and I am speaking, of course, primarily for my own institution, we have tried to have present the collected facts without making specific recommendations. In a few instances, of course, recommendations have been made. For the most part, they have been followed.

Of these, a few are in the realm of future plans and will undoubtedly show their effect at a later time. Speaking of the future, I am reminded very much of Senator Maroney, who, after making many visits to many aircraft production plants in the United States, went back to report to his committee in Washington. In talking to the committee he envisaged this plan of the future. He gave it to the committee by pretending he was the captain of a futuristic plane. He started by saying, "This is the captain speaking, welcoming the people aboard for this future flight. You will find the ballroom on the upper left wing, the badminton and shuffleboard courts will be on the right wing, the swimming pool is located beneath the lounge at midship. Ladies, and gentlemen, I hope you all have a pleasant flight, if we can just get this clumsy son-of-a-gun off the ground."

I often feel that Institutional Research and management planning are a great deal like Dean Rusk. Now, Dean has a great routine, you know. He goes out to the Washington airport and gets aboard his plane and tells his pilot to go anywhere. We've got troubles all over.

This is true of a university, and as a result of the problems, some of our most important studies have resulted in the improvement in our professional education program, a continued raising of admission's standards; in addition, to faculty and staff benefits, adjustments of teaching loads, improved control of class sizes, the dropping of certain remedial courses, the continuance of certain two-year programs, better plant utilization, and other adjustments. We made the recommendation several years ago that we hold stable at least for two years on tuition. This has been completely ignored and I suppose it will continue to be, for private colleges are faced with a very serious dilemma in this respect.

We are currently engaged in the most exciting project of all. We are trying to determine the profile "image" of percept of the University. This is being taken from instruments devised primarily by ourselves, and is most fascinating. I hope that we can come out with some excellent techniques that can perhaps be used by other institutions who are also interested in this area.

In any determination of the role institutional research can play in managerial decisions, the size and complexity of the institution-and most assuredly-the extent of the proposed changes are highly important factors. This may be likened to a situation I noticed the other day in downtown Chicago. I pulled up to the stoplight and noticed one of those huge, beautiful Lincoln Continentals stopped at a light and surrounded by five little foreign cars. The Continental signaled to make a right-hand turn and the other five vetoed the signal.

Now the larger the institution and the more complex its organization, the larger the number of special interests that have to be considered. Speaking of special interests, I have never forgotten Mort Sahl's comment. You know, Dulles was a very favorite subject of Mort Sahl, and in explaining the CIA at one time, Sahl said, "This is an agency of government whose foreign policy occasionally agrees with that of the United States of America." In contrast to the multi-purpose, the complex institution generally is made up of a number of units each having a certain degree of autonomy. The difficulty of making changes is multiplied. Multiplied certainly, but not impossible. Therefore, the nature of the problems and the personalities and attitudes of the persons responsible for institutional research are important factors. As Paul Bissel said at the North Central meeting the other day, "Unless those of us involved in institutional research are irritating someone, there isn't much going on." There has got to be irritation on campus.

A first combination of factors is the sense of leadership and the location of administrative powers. A former President of Princeton said, "A faculty, by definition, is a society of intellectuals, and intellectuals resist organization." Indeed many universities do their best under conditions that would be near anarchy. Yet there must be organization, and this involves rules and methodological procedures even under the most democratic system. This, in turn, calls for some form of administrative hierarchy together with a substantial feeling of loyalty to the institution and to the group. The "organization men" on the faculty are not what make the university great. Its greatness flows from the creative work of individuals as individuals who value self-expression and reward nonconformity. The university thrives best in an atmosphere of controversy, for it is through diversity and clash of view points that learning is advanced.

I further suggest that the time has come for faculty leadership to worry less about infringement upon its selfish vested interests and reconsider their position toward the university administration so that the two may work as a team, and thus enhance rather than destroy the prestige and force of the president's leadership position.

Next, and a most important factor, is the maintenance of free and open two-way channel communication. This is very much like President Kennedy. You know, he has really got it made. One of his techniques is to call in the national association of manufacturers and promise them that prices will go up while salaries will go down. He calls in the AFL-CIO and tells them that salaries will go up and prices will go down. He calls over Secretary Goldberg, and says, "Art . . . take care of it."

No matter how persistent they may be in their prejudices, or how ruggedly they may cling to their power of control, faculty members are not immune to the argument of factual evidence. In fact, their own scholarly orientation, which often, I must admit, leads them to distrust practical or basic research, also leads them to recognize that it is the essence of scholarship to look at facts before drawing conclusions. Quality certainly is the key word of higher education in this day and age. How to maintain this and the truth with our constantly changing conditions is the major issue. To make wise and careful decisions is partly the responsibility of institutional research.

Therefore, to be of the greatest service in improving higher education and to be of the greatest aid in making decisions, institutional research must be well-planned, well-directed, imaginative and centralized, and adequately financed. I think that all of us, whether we are spending all or a portion of our time in this highly interesting, most exciting field of institutional research, must never get to the point of the fellow who went to see his analyst because he was disturbed and depressed. Now he was disturbed because he was a very short gentleman, a real little guy who suffered from all sorts of inferiority complexes and traumas. His analyst spoke to him and they had a real theraputic session. He told him in no uncertain terms that this was all in his mind. He had nothing to fear; that he could do anything. Well, the therapeutic session worked fine. He left the office feeling ten feet tall. He was great. He was filled with missionary zeal. He was going out just like people in institutional research and was going to reform everything and do everything just the way it should be done when a cat came by, and ate him up. This is a fine definition of institutional research, I think.

It is certainly the most exciting field today.

CARLSON:

Our next discussion person is Mr. Leo M. Corbaci. Mr. Corbaci received his A.B. degree from DuQuesne University and has a masters from the University of Notre Dame plus other graduate work at Syracuse University. His administrative title or his current title, rather, is Administrative Assistant to the Vice President for Academic Affairs at the University of Notre Dame. What this means in practice is that he has the responsibility for records, registration, space schedules, plus institutional research. Without further adieu may I present Mr. Corbaci.

CORBACI:

One thing I wanted to point out is that this is the first panel that we've had here which includes both public and private schools. And as far as the private schools are concerned, we have a completely different outlook. Within the private schools themselves, we have a breakdown between primarily non-resident schools like DePaul and a resident school like Notre Dame.

One of the first points which makes a lot of difference in the way we handle our institutional studies is that we have to operate within our income one way or another. That is, tuition, which is subject to competition, and profit from auxiliary enterprise plus income from endowment. Once we have those three items, we can think in terms of analyzing our costs. Cost is a very important item for us, so much so that we have to even analyze the departments before new courses are brought in. I realize that this happens in other schools, but as far as private schools are concerned, it is much more important.

The second thing, of course, is that we have an advantage in that we can limit our size, which is just what we're doing at Notre Dame for example. The attempt to achieve the optimum in size creates its own problems. From the economic viewpoint, there is an optimum of size in the university. In quality control there is an optimum of size, of course, also in the classes themselves. How large the university gets, as far as I can see, is immaterial because no university is any bigger that any individual class, as far as quality is concerned.

Thirdly: this institutional research is affected by the fact that we are a private operation. For example, at Notre Dame enrollment projections are not important as such. What is important to us, however, is student enrollment qualifications (or multiple applications). This affects us very much because we must have some way of knowing how many students to accept in order to get our quotas. At Notre Dame this year we have 7,000 inquiries, 4,000 formal applications; we mailed out 2,500 acceptances. And out of that we hope to get 1,450 students. In addition, we attempt to analyze the sources of other potential enrollment; and we are affected by all kinds of weird things. At Notre Dame 80% of our students live 300 miles away and 80% are from outside the state of Indiana and from all over the country. We are affected by economic disaster and fads in education.

A fourth field of very important institutional research as far as private schools are concerned, is prediction studies. In other words, it would help, when we bring in the boys, if we could predict their survival. From the administrative point of view these studies are valuable since these predictive factors enable counsellors to assist students. The University feels that once we have selected, we have the obligation to keep the boys from dropping out.

Another side that is very important is that you people have to satisfy the state legislature. We have a completely different clientele that we have to satisfy. We don't have to worry about the legislature but about individuals and expressions of the alumni and donors and that type of thing. The one difference, of course, is dealing with the donor and alumnus. They don't have any direct authority over us, so that can qualify the way we make our decisions and also the type of research we have to provide.

Another point. Jimmy Doi was pointing out that as far as institutional research is concerned, we have to make a distinction between long-range and short-range or operational problems. It is important for us to realize that if we are going to emphasize effectiveness rather than economy, that institutional research will be of any real value only if we can integrate it into an over-all system. Unless the institutional research operation is tied in so the information it produces can be used by the man in authority, institutional research is not of too much value.

In this dimension I think we should point out that we have a golden opportunity here. We have a status symbol, a computer. We have tab equipment. Many of the smallest universities in the U.S. have these things. So that we have one advantage over even medium-sized business, and that is we have access to this equipment. This is something that a lot of businesses do not have access to. If we waste the opportunity, of course, we have a difficult time trying to justify the existence of an institutional research bureau.

Finally, I think that we should emphasize this point, that the collection of the materials coming out of institutional research is useless to us unless we have some fully developed method within the university to present it to the policy makers. Now as I've said before, we have to evolve the method. This involves some formal institutional channels of communication or we can come up with one that's less formal but it still puts the findings in the hands of those that have to make the policy. As Elmer West mentioned, whether they use it or not, that is another problem. At least the information is put there so that some judgment can be made. Universities are traditional and difficult to change. This we have to live with. Institutional research will not change this. You have built in futilities here because of faculty opposition. I just want to point out that one of the ways that we have evolved at Notre Dame for getting this information has worked out pretty well. For some of you public schools it might not be of any assistance but as far as the private schools are concerned, it might help. And that is that there is a distinction made between policy and operation. We intend to eventually create an administrative vice president.

About once a month we present the problems to the administrative vice president. And the problem we have is to find some way to get operational difficulties up to the level where someone could made some decisions. The president of the university has appointed a special assistant who does nothing but sit ex officio as the chairman of weekly staff meetings, for example, when we hit registration and have a big discussion of it. Then he as chairman of this special system, has access to the president before we bring it up. He has access to what we call the Local Council, so that on the operational level any statistics that we work out we know are at least going to be brought up. We know that if they have problems they can present them to us and we can find ways that we can work them out or at least come up with some kind of an answer, as far as the information is concerned. As this thing becomes more formal we hope to transfer under the control of this special assistant (there may emerge a Vice President of Administration) the following: admissions, registrar's office or records, the data processing center, computing center, mail and clerical centers, etc., and a separate office of institutional research.

In this respect, we need to coordinate and evaluate the quality of output. All we really need is someone to coordinate it as far as being effective to the university.

GEIGLE:

I don't think I can make any comments, really, after that elephant story. I think we should close the meeting. But, now Leo said something about integration of this particular bureau with the university as a whole and I'd just like to mention for your own edification and understanding the situation here at Northern, which I think is very fine. Dr. Howell, as director of the Research Bureau, is a member of our Cabinet. And the cabinet is made up of the President and myself, the Academic Vice President, the Vice President in charge of Student Personnel Services, the Director of Regional Services (which is our publicity area), and the Business Officer of the University. And he is a member on this cabinet just the same as the rest of us. So anything coming into the cabinet he gets, and can make his comments whenever he wants to. At the same time, he is also a member of the overall University Council, which is made up of administrators and staff members (staff members elected by the staff) which is the policy forming council of this university. I thought you might be interested in that and the position that our Director holds in relation to the overall policy of the university.

CARLSON:

Question?

DE ZONIA:

I would like to hear some comments with respect to the integrity of the institutional research personnel who were approached by the administration, that as to this present study -- I ask this question because I am familiar with one institutional study which was done, and the conclusion drawn at this particular college was that so many of the freshmen ranked on a certain level on the Henmon-Nelson test or other tests that it was the judgment of the administrative committee that no grades below the grade of B should be given to the Freshmen except under unusual circumstances. In other words what I am asking for is somebody to comment on the use and abuse of data, and whether or not the institutional research personel should speak up to the administrator and they say, "Mr. President, I think you're all wet as to this kind of conclusion". Now before anyone comments let me say that I think it is a very personal question.

GEIGLE:

Well, I think it is, too. My only answer to your question would be, that if the institutional research bureau has facts and figures on pupils as Dr. Howell does, send him across the country and invite any comments he wants to on it. As someone said, the administration can do what they want to afterwards. But at least they have it. In fact, apropos to this particular point, I might reflect on something that was mentioned by the chairman of our Teacher's College Board. A directive was made to the President of this institution and the three sister institutions and was directed also to the business officers, and this reply in my thinking applies to the Director of Institutional Research. The Chairman said to the Presidents and to the Business Officers, "You Business Officers are responsible for the financial affairs of the University. You are responsible to inform the President of anything that deals with the financial affairs, whether right, wrong, or indifferent. But you are responsible to inform him. He can do what he wants to with it afterwards, but you at least are responsible for providing information. If you don't, then you are derelict in your duty." I would say this describes the duty of the Bureau of Institutional Research.

CORBACI:

At Notre Dame as regards selective admission, we have had this argument come up over and over again. As a member of the faculty I am flunking as many now as I was ten years ago. After awhile this becomes habit, of course. We run a grade analysis and send it through to department heads, and almost all of them will do something within their own departments concerning this. Codes are used, but we just recognize these listings are needed. Where grades are out of line, this automatically calls for the Academic Vice President, the Dean of the particular college (they all get copies of this) to act. We had one stirring incident where 2/3 of thirty students flunked -- a case where a professor didn't realize that this was reflecting on himself.

STOUT:

I would like to speak to that. First of all, if you don't have integrity, why bother? Secondly, being obliged to an institution and faced with this problem of trying to run on tuition and endowment funds, as much as possible, and remain in the act. You might be interested to know we do not have a full-time person assigned to a department or bureau of institutional research. We feel that we are almost at that point, but this decision will be made within the next month or so. I have had a committee working with me: a member from the mathematics department, one from the sociology department, two psychologists, and a Germanic philologist. I suspect this philologist came as a result of his own interest, because I can not figure out any other way that he got to the committee.

HOWELL:

We still have time. Do you have any other questions? Yes, Miss Jass?

JASS:

Several of the speakers in the last few days have suggested that people involved with institutional research should not or do not make recommendations for solutions to problems. Is this not part of the duty of the person involved in institutional research--not only to collect the data but to analyze, interpret, and investigate all possible solutions, and possibly make recommendations for the best possible solution?

CORBACI:

It is a very difficult answer. Yes! This is a bright point about this organization. At Notre Dame we felt this need. A man who does research of one type or another, at some point can present, even suggest studies within a department, and present them for my approval, and automatically he can sit in if he wants to sit in on these weekly meetings and make recommendations. This is our way of working. We feel that everybody has the right to be heard or the privilege to be heard.

GEIGLE:

May I make a comment? I think you people should be able to summarize 1, 2, 3, 4, 5 at the end of the study! In summarizing, you do not have to say that this is a recommendation. Now I have a lot of arguments with Charlie Howell about this, and I say, "Charlie, what do you mean by this?" And he will say, "Well, if I can show this 1, 2, 3, 4, it would take a pretty dumb person not to know what I am driving at, without infringing upon the administration by saying I am recommending this." This is the way I feel about it.

WEST:

A part of it is this semantics problem which I think can not be solved by calling these alternative modes of action, or trying to force the facts. It seems to me that this gets around the administrative difficulties and at the same time puts the administrative responsibiltiy into the example.

HOWELL:

Are there any other comments on that? Questions?

FIFTH SESSION

Presiding: **Charles E. Howell**, Director, Bureau of University Research, Northern Illinois University.

INVENTORY OF INSTITUTIONAL RESEARCH PROBLEMS NOT ALREADY DISCUSSED, STANDARDIZATION OF QUESTIONNAIRES, ETC.

Speaker: **Winslow R. Hatch**, Coordinator, Clearing House of Studies for Higher Education, United States Department of Health, Education and Welfare.

Closing Summary

HOWELL:

Dr. Hatch, whose assignment it is to discuss neglected problems or emphases, has been put in a position where he could not possibly have known until an hour ago what might or might not have been touched upon.

Dr. Hatch has been with the U.S. Office of Education for three and a half years. Before that he was Dean of General Education at Boston University. And before that, for 16 years he was at Washington State University. He is Coordinator of the Clearinghouse of Studies on Higher Education. In addition to this, he has put out a series of pamphlets, some of which are on display in this room, which represent rather detailed treatments of certain educational developments. I can appreciate his situation when he observes that the funds for everyone of these pamphlets were chiseled out of monies originally appropriated, but not spent, for other purposes. This is, of course, an unheard of kind of thing in a university!

We are departing a little from our procedure to date in that, barring whatever Mr. Hatch has to say, we will spend the remainder of our time in discussion from the floor, despite the fact that it seems almost impossible for anyone to discuss a paper whose content Mr. Hatch himself could not have known, too clearly, until this moment. Mr. Hatch.

HATCH:

Since one has no choice in a situation like mine, I shall move in, plow ahead, and hope for the best. Since I have no prepared notes, this is the session that ought to be opened with a prayer, both from your point of view and mine. I shall not try to emulate previous speakers for I have neither their "speed" nor "stuff." What I shall do is to show you what I think is the finest compliment I can pay you by simply throwing myself on your mercy and thinking out loud with you.

But first, I should make a confession; while very interested in institutional research, I have not been actually caught up in it as a practitioner. I am rather, an interested observer standing on its perimeter, a friend of institutional research who is perhaps as concerned about it as you. I will start with this concern and I will be earnest.

As I stand where I do, and you sit where you are, and ask, as I ask, "Is there something we have missed? Is there a missing emphasis?", I sense that there is and I think you sense it too. At least, there is something which, if not precisely overlooked, has been slurred into. This missing thing or emphasis is very important to me and, I believe, to you. Since you are important to your institutions and they are important to the country, it is something that lies close to the national interest.

Let us begin by taking a good look at a word or two that Jimmy Doi dropped at the beginning of the conference. Jimmy said that we were, in essence, concerned with improvement; that this could be improvement in the operation of an institution, or improvement in its program, or both.

While I have not been in institutional research I have been close to research--this was biological research, not your kind. A national research fellow and later dean of a school of science, I am approaching this as a scientist might, as someone interested in research and deeply committed to it. My experience, and particularly my experience of the last 24 hours, leads me to do something that has always seemed to me to be very important in research, namely, to analyze one's problem. In doing this I am leaning on the 16-year hitch I did at Washington State University. What I learned there I got in answer to a question: "What makes Dr. X consistently hit the jackpot?" "There are Drs. Y and Z. They, too have fine minds. But Dr. X is the one who comes up with the research that year in and year out packs the wallop. "Why does he get the national headlines?" "What is his secret?"

The conclusion I finally reached was that it was the quality of his analysis that made the difference. It was what he did before he began his research that made him so effective. While not the whole story, this is my explanation for why some laboratories and bureaus have a talent for doing important research, and others miss, and continue to miss, year after year. It is unfortunate that this step is neglected or botched because it is often no more difficult to do important research than it is to do trivial research or research that is simply urgent. This, I think, is our problem, to determine how we can best insure that this research of ours, this institutional research, deals with important matters.

Let us press the question home. Jimmy says that what we are interested in is improvement; improvement in operations and in program. But operations are a large order. Which operations? Improvement in program? What program? These do not appear to me to be idle questions. Actually, their importance has grown on me of late because in government, as in bureaus of research, one is always making choices, day to day choices, between the urgent and the important. One can hardly be what he aspires to be, in Washington or in DeKalb, if what he does is relatively unimportant. What I am saying, in sum, is that our job is more than "the quantification of the quantitative." As a matter of fact, I wonder if we can afford to accept this definition of our job without doing ourselves and our research great injury.

This observation leads directly to my next point, namely, that we need to husband our resources. We are simply too few. If all of your colleagues from all sections of the country were assembled here, we would still be too few to do the job that has to be done. Elemental self-interest as well as the national interest, dictates that whenever we have a choice that we decide in favor of the important.

This brings us to the question as to what is important, what is it that has this over-riding importance? An answer can be found by several routes. One that appeals to me--and this I suppose is to be attributed to a biological background--is suggested by the observation made in high places, that American higher education can not win in a numbers game. Sitting where we do, where we are constantly reminded that our problem is education for survival, is sobering. Furthermore, the intelligent reports we see, suggest that this is not an irresponsible observation. If one looks at survival as a biologist might, it is not too difficult to state specifically what this means. What are those intellectual attributes that have had, and presumably still have, survival value? They are man's knowledge not only of what his experience as a race has been but what an examination of his experience teaches him. Out of an examination of our educational experience and out of our disenchantment with the quantitative comes the realization that in place of unexamined quality--we most substitute an examined quality, a quality that is subject to research and has been researched.

My concern, then, is that in institutional research this kind of quality be made its primary focus. The problem here, of course, is that we can not simply espouse quality. We cannot simply endorse something called quality. We rather have to ask and try to answer the difficult but not impossible question: "What is quality?" Is quality an intangible thing or does it have substance. If it is tangible, in some degree, is it not something we should take into account in institutional research? If we don't we--and our colleagues too--may find ourselves crucified on a cross called quality. Some of you have said that you are going to get good budgets next year to improve the quality of your programs, but if you have not defined quality, what do you mean to do? I raise this question with you because it lies in your hands, to help or blunt the drive for quality.

What I am saying is suggested in part by a problem that Jack Evans raised. I am not close enough to your inner councils to know whether you view your job as being to provide information, letting somebody else determine what information, or whether you insist, always within certain limits, upon determining what information you shall do research on. This I ask not only in your interest but in the institutional and national interest.

What I am reflecting here, is, I suppose, the result of my operation of a national clearinghouse of studies on higher education and our publication of the series, New Dimensions in Higher Education. Here, you will discover, if you can wait six months, that quality is featured in the next three pieces, namely, "Quality and the College", "Science of Teaching," which is an examination of quality in the heartland, and "Criteria of Quality." Our distillate, then, of a dozen studies is quality. We invite your participation in the development of the last three studies. While thinking on my feet is all that is possible here, I would be happy to think with you in print, joining you in whatever correspondence you may initiate.

As regards the problem of quality and of your involvement in it, let me share with you the thesis examined in the last study. It is that quality is susceptible to definition, or at least some elements are. Since you folks sit in on the research from which these criteria are derived, or, at the very least, are cognizant of it, you make an informed audience. Of these elements, or criteria, or "standards", it may be observed that they are potentially great equalizers; because the small liberal arts college is, at least, as strategically positioned as the large university. Quality plays no favorites. It would also appear that these criteria are as applicable to one institution as another, and as applicable to one student as another for no institution or student need have lesser aspirations for quality than another.

I will take you into this study only to the extent of indicating the approach made as regards a single phenomenon, namely, inquiry or independent study. I have chosen this area because a substantial amount of information is available, much of which must be known to you. There is, for example, the study done at the University of Michigan by Ketchum, Parsons and Beach in which they demonstrated that in the acquisition of information students can bring it off handsomely if they can be induced to accept a major responsibility for it. It may, accordingly, be concluded that in the acquisition of information the personal intercession of a teacher is not required in the degree that characterizes American higher education. It was found specifically that students with no class contact with teachers (or with other students) acquired as much information as did those in learning situations in which teachers (and other students) played prominent roles. The research, of which this is only a sample, suggests that it may be possible to develop an important and useful distinction between the acquisition of information on the one hand and the examination of information on the other. Actually, the research on independent study has a bearing on many things that have been discussed at this conference, such as class size, teaching loads, student-faculty ratios and even cubic footage. If on top of this you pile the research Mr. Froehlich described and if in addition to his contribution you throw in all of the utilization literature, the documentation is impressive. This data suggests an hypothesis which is one of our criteria of quality, to wit that quality is manifested in institutions that do the least "telling", so far as their instruction is concerned, and provide the most "teaching." Quality, then, appears to be associated not so much with the presentation but with the examination of information. The import of all of this for us is that until institutions determine how they propose to instruct their students they can hardly instruct their bureaus of institutional research as regards one of the things that badly need doing.

I shall not take you through all nineteen criteria but let this single illustration suggest what we are trying to do.

The thesis developed in the "Criteria of Quality" paper has been checked in another document, entitled "Science of Teaching." In choosing this title we had, presumably, the same thing in mind that Dr. Geigle had when he spoke of the science of administration, namely that the approach to teaching must be ordered or scientific. When one makes this approach to teaching it is curious--almost frightening--to discover that there is an impressive concensus in learning theory. When one takes this concensus to eight literatures dealing with teaching practice it is encouraging to discover that this concensus is reinforced as many times. We can only conclude from these studies that insofar as the strategy of teaching is concerned we are in surprisingly good shape. The problem lies in our considerable inability to exploit the strategy. In saying this, a distinction is made between strategy and tactics for it must always be kept in mind that as regards the latter each teacher, department and institution has to work out his or its salvation.

Knowing what hour it is and not wishing to abuse you further I shall sit down.

HOWELL:

One might almost have thought that Mr. Hatch and Mr. Doi got together surreptitiously as beginners and closers of this conference, because I am sure, upon careful reflection, the things they both have said have a very close relationship to each other even though it may not be immediately discernable. The meeting is now open for any questions you may wish to raise with Mr. Hatch or with each other concerning what he has had to say. Are there any questions? Or are you stunned? Mr. Silvey.

I do not have a question, but I suppose it would be in order to commend the gentleman for a very fine speech and I would like to do that.

HOWELL:

Are there other questions?

SCHWEHR:

I do not know whether it is really a question, but it is a reflection. We are being reminded to put first things first--to concentrate on the most important aspects of our institutions. I wonder, in all seriousness, whether it is not presumptuous on our part as people in institutional research to undertake to select from the total institution what things are most important. Is that completely within our jurisdiction, or is that not largely up to the administration? Here I want to throw in a new element--the faculty, which should have a great voice in these determinations. Should it not be the faculty as a total body that has a responsibility to give more direction to institutional research people than they have thus far been receiving. While my comments may sound like a problematic statement, I mean it in a questioning way.

HATCH:

Since you have provided the opportunity (or excuse) I shall take a little time to develop what I had in mind. Institutional research people have, I think, a responsibility, a vis-a-vis the administration and faculty, to inform them of the research that has been done. It is also their responsibility to have reflected on this research to the point where they see its significance for their institution. They should, in a sense, continually "bedevil" the administration and the faculty with the "right" questions and as they sit in administrative councils and meet with faculty committees they might appropriately remind and keep reminding their colleagues, that there has to be a priority in their planning, that the resources of the institution are always limited, and that, finally, they work with those who are disposed to do something about these high priority items. In sum, bureaus of institutional research should try to so order their arrangement that they can attack critical problems, the first things. To the extent that you can protect your option to do that which you can do best, to that extent you can husband your resources and make them count for more. To me, yours is a science and that which you do is research. I do not want you to feel that you are technicians and that your's is an institutional technology. These are important distinctions. A man, Galsworthy tells us, can not escape from his own self respect; neither can institutional research. If you run errands, you can not have the respect you should have and need, personally and professionally. If you will play the role of educational statesmen you can have this respect and deserve it. As a faculty man--and I still think of myself as such--I do not mean to minimize its role, nor would I want administrators to be less than administrators. Institutional research could simply make them both more effective.

In the larger role I see for institutional research it will, of course, always be wise and prudent to do only that which you can and that which you can afford.

HOWELL:

Are there any comments?

QUESTION:

Sir, may I ask a question? In this Volume 13, "Criteria of Quality," what criteria of quality are examined and in what areas are they applicable?

HATCH:

We are at that point in our work where, as we say, "we have turned over some of the rocks." There are others. Our hope is that you can help us find more rocks under which to look. Boiled down to its essence its thesis is that while we are all for raising standards we have not gotten around to asking--and neither have the Gardners or the Rockefellers--"what standards?" Some of the standards currently being raised are pretty dubious ones. If not these, what standards shall we raise?

In the briefest compass, these standards of quality would appear to be found:

(1) In those institutions that do the least "telling" and the most "teaching." What is done here is to make a distinction between acquiry and inquiry. These two are always mixed but in "informing" the emphasis is on acquiry and inquiry is subordinated. Teaching on the other hand is characterized by inquiry and acquiry is a concomitant. Support for this thesis is found in the fact that experimental colleges typically describe their teaching as being a form of inquiry. In your library there is also a learning and a teaching literature that add support. Actually, that which we call teaching or inquiry is basically but a pseudonym for Bruner's "discovery" and Gagne's "guided discovery." The institution, then, that does the least "telling" and the most "teaching"--as these two words are defined--has raised what we call standard number one. There are some very practical implications in this standard for not only class hours, teaching loads, and for staffing but for those instructors who are primarily informers and may not feel altogether comfortable with the thought of teaching machines.

(2) In an institution that does little telling and much teaching, learning resources are needed of a kind not available on most campuses. This brings up standard number 2, which deals with the adequacy of learning materials and facilities.

(3) A third standard is seen in institutions that provide a minimum of remedial instruction because every hour is spent in remedial instruction has to be subtracted from the amount of time available to a student to still acquire a higher education. A new and promising corrective is programmed learning because it leaves a faculty free to concentrate its attention upon providing a college-level education.

(4) A fourth standard is raised by those colleges whose students do much general reading. Statistics bearing on this criterion are found in every college library. From the same source one can also discover a good deal about the reading habits of the faculty.

(5) Students at some institutions spend, on the average, 26 hours or less a week in out-of-class study. The standard suggested here is that this figure should more nearly approximate the institution's expectation which lies normally between 30 and 45 hours.

(6) A sixth standard is demonstrated competence in independent study.

(7) A seventh standard is seen in the wide use of problem-oriented instruction or inquiry; this done in conjunction with independent study.

(8-9) These standards are seen in institutions that can demonstrate significant gains in critical thinking and creativity.

(10-11-12) These standards deal with the success an institution has in resisting the orthodox, the ill-liberal and the intolerant, and other leveling influences. Those, research tell us, that are successful in this have the attributes that enhance learning.

(13) Colleges and universities often have a notable impact on students as regards the values and the attitudes associated with what is called a liberal education. Sanford's, Heist's and Stern's instruments are available.

There are 5 or 6 more standards but I am sure I would be well-advised to stop here.

QUESTION:

You mean experimenting with teaching techniques?

HATCH:

While many of these criteria get at teaching techniques, curricula approaches are also involved, as is the management of teaching and of learning. For example, some of the criteria we failed to mention deal with the way an institution uses its resources. Do its best teachers teach freshmen, underclassmen, upperclassmen, or graduate students? Also involved is the question as to whether an institution's best teachers are paid as well as its best research scholars. The latter is deemed important because our society, by and large, honors that which it pays for.

These, then, are our standards or criteria. This is what we would like to have you examine with us. I didn't mean to inflict this much on you but your questions have provided just the right excuse.

HOWELL:

Any other questions?

QUESTION:

May I ask a very naive question: Where can you write to Mr. Hatch for the substance of what he has said, or has this been said beforehand.

HOWELL:

The address is on the program. It is the U.S. Office of Education, Washington, D.C. I am sure that he is going to find that his mail will increase as a result of what he has said. Does anyone else have anything to say for the good of the order?

I would like to say a very few words then. I think that we have had a very fitting climax this afternoon. A fitting challenge in terms of the ultimate goals that we are seeking to reach in various institutions and that we in the field of institutional research are seeking to help our institutions to reach. I think that we need to realize that the "status quo", which is Latin for "the fix we's in", is not going to change tomorrow, next week, or next year, that the things we have heard this afternoon are ultimate goals that we need constantly to have in mind as we attempt to move from where we are to where we want to be.

I am reminded of the story of the tourist who got off on the side road down in Georgia and stopped at a farmhouse where there were three men out in the yard. He inquired as to how to get to a certain place, and one of them said, "Go down this road for about two miles 'til you come to a white church. Turn to the right and you go about a mile. Nope, that won't do. There's a bridge out down there. Well, he said, if you go down three miles, you'll come to a corner where there's a red barn. You turn to the right there. You go about a mile -- No, no, he said, that won't do either. There's been a washout on that road." He turned to the third fellow, and said, "Jim, you tell how to get where he wants to go." "Well," he said, "you know if I wanted to get to that place I don't think I'd start from here."

I don't think we need to find ourselves in the position of not starting from here to the place where Mr. Hatch wants us to go. But I do think we have to remember that there are going to be washouts and detours and bridges out and blizzards and a few other things that are going to get in the way. But, we have to remember too that these bridges can be and are replaced, that these roads are repaired, and that eventually the snow drifts will melt and go away. That doesn't mean that we have to sit and wait while Nature takes care of these things. We're going to have to be clearly aware of exactly where we are trying to go and do what we can on the way to get there as quickly as possible.

I'd like to express my personal appreciation for the fact that you are all here. I certainly think we have had a representative group. I know that I learned a good deal, and I hope the same

I know that I have learned a good deal, and I hope the same is true for all of you. All of you have a good trip home. You will all be getting a summary of these precedings--not next week--but you will be getting it. Thanks a lot, and we'll hope to see you again next year. Thank you.

EXHIBITS*

*Our apologies if this listing is incomplete. An omission may be due to material arriving after the major portion of set-up had been accomplished or being picked up before the listing was completed.

Source or College or University	Title of Exhibit
American Council on Education	Research Designed to Improve Institutions of Higher Learning
University of California & California Higher Education	California's Ability to Finance Higher Education 1960-1975 Adult Education in California Center for the Study of Higher Education, Annual Report, 60-61 Research on College Students Studies of the Admission of Transfer Students with Advanced Undergraduate Standing Selection and Retention of Students in California's Institutions of Higher Education Projections of Enrollment for California's Institutions of Higher Education, 1960-75
Concord College Athens, West Virginia	Classroom Utilization at Concord College Courses and Enrollments at Concord College 1961-62 A Study of Student Enrollments at Concord College 1952-53 through 1961-62 An Analysis of Courses Offered at Concord College During the Summer of 1961 A Study of Faculty Rank, Promotion, and Salary in Selected Institutions of Higher Learning
University of Delaware Newark, Delaware	A 15-year Forecast of Students, Staff, and Facilities for the University of Delaware
DePaul University Frank J. Lewis Center 25 East Jackson Blvd. Chicago 4, Illinois	A Persistence Study of the Entering Freshmen Class of September, 1954

Source or College or University	Title of Exhibit
DePaul University (cont.)	A Study of Certain Student Sociological, Economic, and Academic Factors Relative to the Enrollment Period 1959-60 in the Colleges of Liberal Arts, Commerce, Music, and Physical Education
	The Graduate School, 1949-59
	Will the Private College Survive?
Duke University Durham, North Carolina	Planning and Development at Duke University First Progress Report (June 1959)
	Long-Range Planning at Duke University Second Progress Report (May 1960)
	Duke University in the Decade Ahead Third Progress Report (June 1961)
University of Florida Tallahassee, Florida	Current Operating Expenditures by Function The State University System of Florida
Fordham University New York 58, New York	The Fordham University Self Study Background Papers for February 1962 Visitation of Fordham University by the Middle States Association and Representatives of Five Specialized Accrediting Agencies, December, 1961
	Annual Report, 1960-61, Francis J. Donohue PhD, Executive Director
	The Objectives of the University (A Preliminary Report, April, 1961)
	Instructional Space Utilization (Preliminary Confidential Report, August, 1961)
	Study of Faculty Opinions and Attitudes, Fordham University, February, 1962

Source or College or University	Title of Exhibit
Fordham University (cont.)	The Faculty Teaching Load (Preliminary Confidential Report, December, 1960) The Fordham College Student's Image of his College, August, 1961 The Catalogs (Preliminary Confidential Report, June, 1961)
Franklin and Marshall College Lancaster, Penn.	Franklin and Marshall College Today and Tomorrow: 1961-1971
Iowa State Teachers College Cedar Falls, Iowa	The First Seven Years: The Graduate Student In Professional Education, 1952-1958 An Analysis of Study Facilities, Conditions, and Habits at Iowa State Teachers College Achievement of Iowa State Teachers College Freshmen The Scholastic Performance of the 1955-56 Freshman Class at Iowa State Teachers College The Fee Exemption Program Over a Four-Year Period Geographical Distribution Study of Iowa State Teachers College Students Grade Point Study 1960-61 1961 Sophomore-Senior Testing Program The Effectiveness of the AETNA Drivotrainer in Driver Education Final Report of the Communication Experiment Conducted by the Department of Languages, Speech, and Literature of the Iowa State Teachers College, 1955-58 Does an Air Age Workshop Course Make Any Difference Report on Experiment Involving Closed-circuit Television at Iowa State Teachers College Mathematics for General Education

Source or College or University	Title of Exhibit
Iowa State Teachers College (cont.)	Summary of Report on Evaluation of the Graduate Program at Iowa State Teachers College (1958-59) Evaluation Report Summer Seminar in Science and Mathematics at the Price Laboratory School, 1959 Summary of Returns From Information Blank Concerning Core Teaching Report of Experimentation on the Use of Student Assistants in Freeing Instructor Time, July, 1959 Follow-up Report of Experimentation on the Use of Student Assistants in Freeing Instructor Time, July, 1960 A Study Designed to Teach Spelling to Fourth Grade Children Using the Typewriter as the Teaching Media
State University of Iowa Iowa City, Iowa	A Study of Graduate Degrees Awarded During the Decade 1948-1957 The Financial Resources of Students at Public Institutions of Higher Education in Iowa A Study of Student Persistence at the State University of Iowa High School Decile Rank Comparison of Entering Freshmen Fall 1961, 1960, 1958, 1956 and 1953 Report of Distribution of Grades First Semester 1960-61
University of Massachusetts Amherst, Mass.	Justification of Salary Requests, University of Massachusetts Budget for 1962-63
Miami University Oxford, Ohio	Review of the Freshman Test Results 1961-62 Information Bulletin - September 1961, Areas of Activity Related to the Institutional Research Service

Source or College or University	Title of Exhibit
Miami University (cont.)	The Validity of the ACT and the PEAT for Predicting the Performance of Pre-Engineering Students
	The Validity of the American College Test (ACT) Predicting the First Year Grades at Miami University
	A Comparative Study of the Performance of Selected Miami University Students on the Scholastic Aptitude Test
	Grading Practices in Miami University's Common Curriculum Courses
	A Study of the Foreign Language Background of 1961 Miami Bachelor of Arts Graduates
	The Utilization of New Instructional Media
	Improvement of Student Quality in the Honor Program - Results of Interviews
	Principles of Evaluation and Measurement Testing and Grading Bulletin No. 1
Eastern Michigan University Ypsilanti, Michigan	Space Utilization Study of Classrooms and Laboratories at Eastern Michigan College for the Spring Semester of 1959
	Campus Development Plan
Higher Education in Michigan September, 1958 Staff Studies by John Dale Russell, Director of the Survey	The Community College in Michigan
	Geographic Origins of Michigan College Students
	Education in Medicine and Nursing in Michigan
	Physical Plant Needs in the State Controlled Institutions of Higher Education in Michigan
	Student Personnel Services in the Publicly Controlled Colleges and Universities in Michigan

Source or College or University	Title of Exhibit
Higher Education in Michigan (cont.)	Instructional Programs in Michigan Institutions of Higher Education
	Extension and Field Services in the State Controlled Colleges and Universities in Michigan
	Financial Assistance to Students in Michigan Institutions of Higher Education
	Space Utilization and Value Physical Plants in Michigan Institutions of Higher Education
	Faculties of the Michigan Institutions of Higher Education
	Institutional Planning for Higher Education in Michigan
	Control and Coordination of Higher Education in Michigan
	Final Report - Higher Education in Michigan
Michigan Council of State College Presidents (7 Volumes)	Pharmacy in Michigan
	Higher Education in Forestry and other Natural Resources in Michigan
	Future School and College Enrollments in Michigan 1955 to 1970
	Field and Extension Services of the State Supported Institutions of Higher Learning in Michigan
	Teacher Demand and Supply in Michigan 1954-1970
	Music in Michigan's State Supported Institutions of Higher Learning
	Michigan Economy to 1970 a Study in Growth
Michigan Council of State College Presidents (2 Volumes)	Section I An Analysis of the Utilization of Instructional Facilities and an Inventory of Physical Plant in Michigan's State Controlled Colleges and Universities. June, 1961
	Section II (Appendices) An Analysis of the Utilization of Instructional Facilities and an Inventory of Physical Plant in Michigan's State Controlled Colleges and Universities. June, 1961

Source or College or University	Title of Exhibit
University of Michigan Ann Arbor, Michigan	An Analysis of the Salaries Paid to the Faculty of the University of Michigan 1961-62
	Some Statistical Measures of Instructional Activity in Selected Schools and Colleges Fall Semester, 1960-61
	Size of Classes Fall Semester 1960-61
	Selective Merit Increases in Salary Recommended for the Full-Time Faculty 1961-1962
	A Special Report on the Activities of the Faculty The School of Dentistry Fall Semester, 1960-1961
	Teaching Loads of Faculty Members, Fall Semester 1960-61
	Appropriations to Higher Education in 21 States in Selected Years From 1929-30 to 1960-61
	The Utilization of Space in Selected Schools and Colleges, Fall Semester, 1960-61, Volume I
	The Utilization of Space in Selected Schools and Colleges, Fall Semester, 1960-61, Volume II
	The Utilization of Space in Selected Schools and Colleges, Fall Semester, 1960-1961, Volume III
University of New Hampshire Durham, New Hampshire	Final Report of the Committee on Academic Programs and Teaching Methods September, 1960
New York University Washington Square New York 3, New York	Preliminary Report on the Study of Non-Immigrant Foreign Students at New York University
	Intercorrelations between High School Average, SAT - Verbal, SAT - Math, and NYU Freshman Average
	Questionnaire Used for Study of Faculty Satisfactions and Dissatisfactions
	Condensed Summary of the Preliminary Report on the Study of Faculty Satisfactions and Dissatisfactions at New York University

Source or College or University	Title of Exhibit
New York University (cont.)	Questionnaire to N.Y.U. Students from Other Lands
	Instructional Programs of New York University Academic Year 1959-60
Northern Illinois University DeKalb, Illinois	An Inquiry into Comparative Gains Made in Those Phases of Reading, Arithmetic, and the Language Arts as Measured by the California Achievement Tests Between Groups of Fourth, Fifth, and Sixth Grade Students Attending Double Sessions Schools and Similar Groups Attending Regular Day Sessions
	An Urban Geography Study of Oregon, Illinois
	Faculty Publications to May, 1960
	Summary of Learnings from Laboratory Experiences As Identified by Students in a Sophomore Course in Human Development
	Graduate Enrollment by Departments and Overall University Totals (Graduate and Undergraduate) from Semester I, 1956-57, through Semester II 1959-60. Also Projected Graduate Enrollment by Departments for Fall, 1960, 1961, and 1962, and Overall University Total (Graduate and Undergraduate) Enrollment for Fall, 1961, and Fall, 1962. (October 7, 1960)
	Summer Session, 1961 I Comparison of Enrollments and Credit Hours by Department, 1960 and 1961 II Short Course Enrollments, 1961 III Answers to Questionnaire, 1961 IV County of Residence of Students, 1961. (July, 1961)
	Total Enrollment by Counties, Fall 1960 and 1961

Source or College or University	Title of Exhibit
Northern Illinois University (cont.)	Faculty Salaries, 1960-61, A Cooperative Study of Faculty Salaries (Confidential for use by Participating Institutions)
	A Study of the Academic Records of Members of the Football, Basketball, Baseball, and Track Squads
	Socio-Economic Background Factors, Entering Students Northern Illinois University, September, 1960, by Sex and by Students Just out of High School or Students by Transfer, September, 1960
	A Study of Mean Entrance Test Scores, Mean High School Rank, and Mean Grade Point Average, of Entering Freshmen, September, 1960, by High School From Which Graduated, in Comparison with all University Averages for the Entire Entering Group for all High Schools from which Ten or More Students Came (May, 1961)
	Residence of Commuting Students, Fall 1960 and 1961 (October, 1961)
	Where Students Live in the DeKalb Community, Fall 1960-61
	An Analysis of Grades Awarded at Northern Illinois University First Semester, 1960-61, by Class Level, Department, Course, and Instructor, Together with Comparisons with Other Institutions and Relationships of Grades at the Freshman Level with Entering Test Scores and High School Rank (April, 1961)
	A Detailed Study of Faculty Load as of First Semester 1960-61
	Distribution of Teachers by Student Credit Hours Taught, by Department, First Semester 1960-61

Source or College or University	Title of Exhibit
Northern Illinois University (cont.)	A Study of the Student-Staff Ratio at Three Levels of Load for the Period 1952-59
	Study of Drop-Outs by Majors of Entering Freshmen and Transfers, September, 1959, February, 1960, and September, 1960, over Three Semesters with Academic Standing at Time of Last Attendance
	Building Shortage at 160 Square Feet per Full Time Equivalent Student (September, 1960)
	Report Concerning Space Use that was Requested by the Joint Council--addressed to Presidents from Richard G. Browne, Executive Officer of Teachers College Board, Springfield, Illinois, Weeks and Hours of Scheduled Classes (May 29, 1961)
	Salary Costs of Resident Instruction in the State Supported Institutions of Higher Learning in Illinois for the First Semester, 1960-61 (Northern Illinois University)
	Distribution of Grade Point Averages for all Work Taken at Northern Illinois University for Northern Illinois University Students Having 32 Hours or More at Northern Illinois University, Student Teaching Omitted, and No Correction Made for Certain Irregular Grades Which Will Not Affect the Overall Distribution (March, 1960)
	Tax Loss to the DeKalb Community (In Comparison with Other Economic Gains) by Virtue of the Expansion of Northern Illinois University (July, 1960)
	Distribution of Graduates of Northern Illinois University Teaching in Illinois During the School Year 1960-61 (July, 1961)

Source or College or University	Title of Exhibit
Northern Illinois University (cont.)	Staff Members Assigned to do Institutional Research in Institutions of Higher Education with Enrollments in Excess of 4,000 (September, 1961)
	Historical Account, Land Acquisition (Includes Land, Description, Person Acquired From, Acreage, Date Acquired, and Original Cost) (October, 1961)
	Distribution of Faculty by Department, Rank, and Training (October, 1961)
	A Study of the Number of Undergraduate Courses Listed in the Catalog, by Level and Department, and Those Offered by Semester and Department at the 500-600 Level, September, 1959, to August, 1960, and the Same Courses Equated to Three Semester Hours Each
	Abstracts of Selected Qualifying Papers at the Graduate Level (March, 1962)
University of Pittsburgh Pittsburgh 13, Pennsylvania	Progress Report on Year 'round Education Volume I - No. 2, Vol. II - No. 1, Vol. III - No. 1
	Background Information on the Trimester Plan of the University of Pittsburgh
	Proceedings of the Conference on Year 'round Education (March 9, 1961)
	Proceedings of the Trimester Conference University of Pittsburgh (June 15, 1960)
	Enrollment and Credit Analysis Spring Trimesters 1959-60 and 1960-61
	Comparison of Academic Aptitude and Academic Performance of Two and Three Term Attenders from the 1959 Entering Freshmen Class Under the Trimester Calendar at the University of Pittsburgh

Source or College or University	Title of Exhibit
University of Pittsburgh (cont.)	The Entering Freshman Class: Fall Trimester, 1960, A Descriptive and Comparative Study The Entering Freshman Class: Fall Trimester, 1961, A Descriptive and Comparative Study Characteristics and Attitudes of Students Attending the University of Pittsburgh Under the Trimester Calendar
University of Puerto Rico Rio Piedras, Puerto Rico	The U.S., Cuba, and Latin America; by Jaime Benitez (Published by the Center for the Study of Democratic Institutions) The University of Puerto Rico; by Jaime Benitez Selected Statistical Tables
Rensselaer Polytechnic Institute Troy, New York	New Spaces for Learning: Designing College Facilities to Utilize Instructional Aids and Media The Development of Animated Films to Facilitate Creative Space Perception Progress Report Improved Teaching Materials, Equipment, and Facilities A Pilot Program in Freshman Chemistry Toward More Effective Teaching at Rensselaer Bulletin Numbers 6 - 8 The Effectiveness of Laboratory Instruction in Strength of Materials by Closed Circuit Television Two Years of Experimental Work on Various Teaching Methods and Class Sizes Instructional Films in Surveying Education An Educational Program in Computing Automatic Graders for Programming Classes The Overhead Projector in the Physics Lecture

Source or College or University	Title of Exhibit
Rensselaer Polytechnic Institute (cont.)	Organization Chart Office of Institutional Research
U.S. Department of Health, Education, & Welfare Office of Education	Impact of College No. 4
	Effectiveness in Teaching No. 2
	Study Abroad No. 6
	The Experimental College No. 3
	The Credit System No. 9
	Advanced Standing No. 8
Higher Education Clearing House, U. S. Office of Education	Reporter - September, 1961, No. 4
	Reporter - March, 1960
	Reporter - March, 1959, No. 562
	Special Reports - April, 1960
University of Wisconsin Madison 6, Wisconsin	Enrollment Projections for Higher Education 1961-78
	Methodology of Enrollment Projections for Colleges and Universities
	Office Machine Equipment
	Student Expenses and Sources of Income 1960-61 Academic Year
Wisconsin Committee for Higher Education	A Statistical Portrait of the Wisconsin College Student
University of Wyoming Laramie, Wyoming	Organization Charts - Revised, July, 1961

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